



United States
Department of
Agriculture

Forest
Service

December 2021



Wildlife Biological Assessment and Evaluation

**Plaskett-Keller August Complex Phase1 Project
Grindstone and Covelo Ranger District
Mendocino National Forest**

Glenn, Mendocino and Tehama County, California

Prepared by:

A handwritten signature in black ink, appearing to read "Joe Chow", written over a horizontal line.

Date:

12/03/2021

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Appendices (Supporting Documents)

Appendix A -Explanation of Timber Strata Codes in GIS CALVEG

Appendix B - Successional Stages and their respective forest vegetation types found on page E-3 of the Mendocino LRMP

Appendix C - IPaC List generated from FWS (end of this report)

Appendix D – Project Map Package (Separate document)

FWS Interim Baseline Document (Separate document)

Action Area Baseline Adjustment for August Complex Fire (separate document)

I. INTRODUCTION

The purpose of this Biological Assessment and Evaluation (BABE) is to document Forest Service programs or activities in sufficient detail to determine how an action or proposed action associated with the Plaskett-Keller August Complex Phase 1 Salvage Project may affect any threatened, endangered, proposed, candidate (TEPC), or sensitive species and their habitats (USDA 2006, FSM 2670.5). Forest Service Manual 2672.4 (USDA 2006, FSM 2672.4) directs us to complete the BE for all Forest Service planned, funded, executed, or permitted programs and activities for possible effects on Federally listed threatened, endangered, proposed, candidate, or species listed as sensitive by the Pacific Southwest Regional Forester (i.e. sensitive species). The BE, therefore, provides a process through which potential effects of the proposed action on TEPC and sensitive species are evaluated and considered during the planning and review process. *Management Indicator Species and migratory birds are discussed in separate reports.*

Species Considered for Analysis

Threatened, Endangered, Proposed, or Candidate Species (TEPC)

Following Section 7(c) of the ESA, the USFWS Information for Planning and Conservation (IPaC) website (<https://ecos.fws.gov/ipac/>) was accessed on **October 14th, 2021** to obtain a current list of TEPC species that may be present in the vicinity of the project area and 2) to locate any proposed or designated critical habitat that may be present in the vicinity of the project area. The full IPaC report can be found at the end of this document (Appendices).

Table 1 is included in this analysis document to aid in determining which TEPC aquatic and wildlife species are to be considered for analysis. The potential for direct, indirect, and cumulative effects to individuals and critical habitat were considered. Species with potential for effects are indicated with a “Yes” and are analyzed in detail.

Forest Service Sensitive Species

This document was prepared in accordance with Forest Service Manual (FSM) direction 2620, 2630, 2670, 2672, 2672.42 and meets legal requirements set forth under Section 7 of the Endangered Species Act of 1973, as amended [19 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14 (c); the Bald and Golden Eagle Protection Act of 1940, as amended; Migratory Bird Treaty Act of 1918 (as amended); Executive Order 13186 (migratory birds); National Environmental Policy Act, 1969; National Forest Management Act, 1976 (as amended); Northwest Forest

The FS-Sensitive species occurring on the MNF are listed in Table 1. Similar to the process described for the TEPC aquatic and wildlife species, Table 1 was used to determine which FS Sensitive species were to be considered for analysis based on geographic and elevational distribution and presence of suitable habitat within the Project's areas or those that may occur within a reasonable distance as to be affected by the implementation of the Projects.

Table 1. Potential for project effects to federally endangered, threatened, proposed threatened and forest sensitive species that may occur in the Plaskett-Keller Project Area of the Mendocino National Forest.

Species	Status	Species Habitat	Potential for Effects	
			Yes	No / Reason
California red- legged frog (<i>Rana draytonii</i>)	FT	Breeding habitat occurs in ponds and slow-moving streams with emergent vegetation, below 4,500 feet in elevation.		Project does not occur within suitable habitat. Project does not affect habitat for this species. Species unlikely to occur on forest. No further analysis.
Western snowy plover (<i>Charadrius alexandrinus nivosus</i>)	FT	Sacramento-San Joaquin Delta, coastal shorelines		Project does not occur within suitable habitat. Project does not affect habitat for this species. Species unlikely to occur on forest. No further analysis.
Northern spotted owl (<i>Strix occidentalis caurina</i>)	FT	Old Mature forest with dense canopies. Areas adjacent to known sightings or Spotted Owl Habitat suitable habitat, individual activity centers	X	There are twelve territories present in the project area and previous known detections in the vicinity of the project area. Suitable habitat is present in the project area. LOPs will be enforced to mitigate disturbance to breeding and nesting. Protocol level surveys are also being conducted for 2021 and 2022.

Species	Status	Species Habitat	Potential for Effects	
			Yes	No / Reason
Northern spotted owl 2012 Designated Critical Habitat	Critical Habitat	Mature forest with dense canopies. Areas adjacent to known sightings or Spotted Owl Habitat Areas, Activity Centers, or individual activity centers.	X	There are sixteen territories present in the p and previous known detections in the vicinity of the project area. Suitable habitat post-fire is present in the project action area. LOPs will be enforced to mitigate disturbance to breeding and nesting.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	FT	Riparian habitat. Breeding occurs in low to moderate elevation native forests lining in rivers and streams lining the rivers and streams. Cottonwood-willow thickets.		Riparian habitat is present in the project area. However, species is not known to be on the forest. Impacts are not expected. No further analysis.
Norther American Wolverine (<i>Gulo gulo</i>)	FSS	Alpine and subalpine habitats within remote areas with low human use. Critical Habitat not proposed on the MNF. Boreal forests, tundra, and western mountains with arctic tundra, subarctic-alpine tundra, boreal forest, northeast mixed forest, redwood forest, and coniferous forest	X	Not known to be on the forest. However, within the species range and elevation.

Species	Status	Species Habitat	Potential for Effects	
			Yes	No / Reason
<p>Pacific Fisher (<i>Martes pennanti</i>)</p>	FSS	Forested habitats below 8,500 feet elevation, with fairly dense canopies and large trees, snags, and down logs. Hardwoods may also serve as an important habitat component. Complex vertical and horizontal structure characteristics of late-seral forests.	X	There is potential for noise to cause disturbance and displacement of individuals. Denning habitat is not known to be present in the project area.
<p>American Marten (<i>Martes americana</i>)</p>	FSS	Forested habitats above 5,500 feet elevation, with large diameter trees, snags, and down logs, moderate-to-high canopy closure, and an interspersed riparian areas and meadows. Montane forests with mature and old conifer forests.	X	There is potential for noise to cause disturbance and displacement of individuals. Denning habitat is not known to be present in the project area.
<p>Bald Eagle (<i>Haliaeetus leucocephalus</i>)</p>	FSS	Forested areas adjacent to large bodies of water. Habitats or areas identified in Draft Bald Eagle Management Plan.		Individuals have been detected in the project action area; however, nesting habitat is not present due to lack of large bodies of water. Impacts to foraging habitat and prey minimal to none. Impacts not expected.

Species	Status	Species Habitat	Potential for Effects	
			Yes	No / Reason
<p>Northern Goshawk <i>(Accipiter gentilis)</i></p>	FSS	Forested habitats. Mature to old growth forest with large trees and high canopy closure. Areas adjacent to known sightings or Goshawk Management Areas or Activity Centers.	X	Known historical detections in project action area. There is potential for noise and smoke to cause disturbance and displacement of individuals. No known nests occur in the action area.
<p>American Peregrine Falcon <i>(Falco peregrines)</i></p>	FSS	Peregrine falcons inhabits rocky coasts in all continents except for Antarctica (Ratcliffe, 1993). A migratory species, Peregrines have established nesting populations in the Arctic and as far south as Tasmania, South Africa and the Falkland Islands (Blood, 2001).		Historical sightings have occurred in the project action area along Pinto Ridge in 1982. No known nesting sites are known in the project boundary area and action area. LOPs would be in place for any nest detected before or during implementation. Impacts to foraging habitat and prey minimal to none. Impacts not expected.
<p>Willow Flycatcher <i>(Empidonax traillii)</i></p>	FSS	Meadows with a willow component identified as providing potential habitat		Riparian habitat present, but no willow thickets present. No historical sightings are known on this forest. Impacts not expected. No further analysis.

Species	Status	Species Habitat	Potential for Effects	
			Yes	No / Reason
<p>Fringed myotis <i>(Myotis thysanodes)</i></p>	FSS	Roosts in crevices in rocks, cliffs, buildings, underground mines, caves, bridges, and in large, decadent trees. Most maternal roost sites documented in California have been found in buildings.	X	Potential for direct impacts. Snag removal could affect roosting habitat.
<p>Pallid Bat <i>(Antrozous pallidus)</i></p>	FSS	Rock crevices, tree hollows (particularly hardwoods), mines, caves and abandoned buildings below 6,000 feet elevation (Philpott 1997; Barbour and Davis 1969, USDA Forest Service 2001a, 2001b). Rocky outcrops in desert scrub	X	Potential for direct impacts. Snag removal could affect roosting habitat.
<p>Townsend's Big-eared Bat <i>(Corynorhinus townsendii)</i></p>	FSS	Caves, mines or abandoned buildings and adjacent open, riparian and forest habitat to those features below 6,000 feet elevation (USDA Forest Service 2001a, 2001b). Montane forests with caves, cliffs, and rock ledges, and may use abandoned mines and other manmade structures	X	Potential for direct impacts. Snag removal could affect roosting habitat.

Species	Status	Species Habitat	Potential for Effects	
			Yes	No / Reason
Western Pond Turtle (<i>Actinemys marmorata</i>)	FSS	Permanent and intermittent aquatic habitats including rivers, streams, lakes, and ponds, below 5,000 feet in elevation. Permanent and ephemeral aquatic habitats such as rivers, ponds, streams, lakes, wetland habitats, and altered habitats	X	Known to occur within project action area, and potential suitable and nesting habitat is present within project area.
Foothill Yellow-legged frog (<i>Rana boylei</i>)	FSS	Perennial rivers and mid-sized streams below 6,000 feet elevation, usually with cobble substrate. Streams in valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, mixed chaparral, and wet meadows with 20-90% shading		Known to occur and reproduce in the Black Butte River. No known detections in the project area. Riparian and stream habitat would be protected through hydrologic and fish management recommendations. As a result, there will be No Effect to the frog.
Karin's checkerspot butterfly (<i>Euphydryas editha karinae</i>)	FSS	Monkey Rock & Hull Mountain		Only known population is at Hull Mountain. Species is not known to be in the project area. Impacts are not expected.
FE= Federally Endangered, FT= Federally Threatened, PFT= Proposed for Federally threatened status CH= Critical Habitat, FSS = Forest Service Sensitive				

California red-legged frog (*Rana draytonii*) was not carried forward in analysis of this project because it is not currently present in any streams in Mendocino or Glenn Counties. Nearest known occurrence is 4 miles northeast of the forest. The California red-legged frog is found primarily in coastal drainages of central California from Marin County south to northern Baja California, Mexico (USFWS 2002).

Western snowy plover (*Charadrius alexandrinus nivosus*) was not carried forward in analysis of this project because the plover breeds along the Pacific coast from Damon Point, Washington, south

to Bahia Magdalena, Baja California, Mexico and winters in coastal areas from southern Washington to Central America (USFWS 2007). There are no coastal areas within the project area.

The Yellow-billed cuckoo (*Coccyzus americanus*) was not carried forward in analysis of this project because the cuckoo occurs in isolated sites in the Sacramento Valley of northern California, and along the Kern and Colorado River systems in southern California (Hughes 2015).

The willow flycatcher is absent from most of California with the only known breeding locations restricted to Sierra Nevada/Cascade region; near Buelton, Santa Barbara County; Prado Basin riparian forest, Riverside County; and several locations in San Diego County (Sedgwick 2000). Other detections have also been known to occur in the sierran meadows of Eldorado National Forest.

Karin's checkerspot butterfly will not be carried forward in analysis because the only known population is located on Hull Mountain, south of the Black Butte watershed (Baughman and Murphy 1998).

Consultation History

Consultation under the Endangered Species Act is conducted both formally and informally. Formal consultation occurs when adverse effects to species cannot be mitigated, including when a "take" authorization is required for project implementation. In instances where adverse effects will occur, the action agency officially requests formal consultation and USFWS prepares a Biological Opinion (BO) with the take permit.

Coordination and formal consultation with the USFWS will be initiated to discuss biological concerns related to the proposed Project. A summary of the coordination and consultation to date is provided below.

- On January 9th, 2021, a coordination meeting with John Hunter and Katie Siedel from the Arcata Fish & Wildlife Service Office occurred to discuss the project moving forward and which the forest service biologist would be handling the project.
- The USFWS's IPaC web site (<https://ecos.fws.gov/ipac/>) was accessed on February 2nd, 2021 to request a list of TEPC species and proposed or designated critical habitat that may occur in the vicinity of the Action area. This list is incorporated in this report as an Appendix.
- On March 3rd, 2021, discussions were had with Katie Siedel and Daryl of FWS to draft up an updated environmental baseline for NSO post fire habitat using the 2020 August Complex Fire RAVG data provided by the forest to carry out future analysis.

- On April 8, 2021 Bryan Yost (SRNF) emailed final updated baseline for NSO post-fire habitat to Joseph Chow (MNF) and Katie Siedel (AFWO)
- Joe Chow (Grindstone District Biologist) reviewed multiple data sets from the Fish and wildlife Service and a layer created by the Shasta Trinity. Data sets were assessed and determined to have drastic differences in suitable habitat acres based on methodology of data processing. It was determined difference in suitable habitat is based on use of basal mortality classification, using a 4 class vs a 7 class. The 7 classification creates an unsuitable habitat layer that is not created from the 4 class. This was discussed with Katherine Seidel and it was determined the Shasta Trinity layer was the most accurate to use based on methodology of data processing.
- On June 22nd, Joe Chow and Katherine Seidel had a meeting about what determination for the NSO could be reached. Potential for a not likely to adversely affect if Joe can support it and defend that determination. Draft report will be sent to Katherine by the end of the week to streamline consultation.
- On June 28, 2021 Joseph Chow (MNF) sent Katie Siedel (AFWO) draft BA.
- On June 29, 2021 Katie Siedel (AFWO) provided feedback to Joseph Chow (MNF) on draft BA
- The USFWS's IPaC web site (<https://ecos.fws.gov/ipac/>) was accessed on July 22nd, 2021 to request an updated list of TEPC species and proposed or designated critical habitat that may occur in the vicinity of the Action area. This list is incorporated in this report as an Appendix.
- On July 22nd, Joe Chow and Katherine Seidel discussed the assessment draft and determined that the determination for NSO will be a "may affect, likely to adversely affect" due to the percent mortality of trees removed in specific treatment units. Joe will modify the draft and resend it to Katherine to finalize the document for formal consultation.
- On August 3, 2021 Joseph Chow (MNF) sent Katie Siedel (AFWO) second draft BA.
- On August 4, 2021 Katie Siedel (AFWO) provided feedback to Joseph Chow (MNF) on draft BA
- On October 14, 2021, a new IPAC report was generated.
- On October 19, 2021 Joseph Chow (MNF) sent Katie Siedel (AFWO) third draft BA.

- On October 27, 2021 Katie Siedel (AFWO) provided feedback to Joseph Chow (MNF) on draft BA
- On November 8, 2021 Joseph Chow (MNF) sent Katie Siedel (AFWO) an updated fourth draft BA.

III. CURRENT MANAGEMENT DIRECTION

The National Forests within the range of the northern spotted owl (NSO) are operating under the standards and guidelines developed for the Northwest Forest Plan (NWFP) (USDA and USDI 1994). The Mendocino Land and Resource Management Plan (LRMP) (USFS 1995) incorporated the standards and guidelines identified in the Northwest Forest Plan.

The NWFP and the Mendocino LRMP decisions required the development of a Late Successional Reserve Assessment (LSRA) before habitat manipulation activities could be implemented in the reserves. Late Successional Reserve Assessments include:

1. A history and inventory of overall vegetative conditions within the reserve
2. A list of identified late successional associated species known to exist within the LSR and information on their locations
3. A history and description of current land uses within the reserve
4. A fire management plan
5. Criteria for developing appropriate treatments
6. Identification of specific areas that could be treated under those criteria
7. A proposed implementation schedule tiered to higher order plans
8. Proposed monitoring and evaluation components to help evaluate if future activities are carried out as intended and achieve desired results

The LSRA for the reserves on the Mendocino National Forest was approved by the Regional Ecosystems Office in 2000.

100 Acre LSRs represent a network of late successional habitat that are to be retained in their natural conditions with natural processes.

Other current management direction on desired future conditions for species listed under ESA can be found in the following documents:

- Forest Service Manual and Handbooks (FSM/H 2670; USDA 1990)
- National Forest Management Act (USDA 1976)
- Endangered Species Act (ESA 1973)
- National Environmental Policy Act (NEPA 1970)
- Mendocino National Forest Land and Resource Management Plan (USDA 1995)

NSO Recovery Plan

On June 28, 2011, the FWS released the *Revised Recovery Plan for the Northern Spotted Owl (Strix occidentalis caurina)*. The purpose of recovery plans is to describe reasonable actions and criteria that are considered necessary to recover a listed species. The 2011 Revised Recovery Plan for the Northern Spotted Owl represents the “best available science.” The 2011 RP recognizes the importance of maintaining, and restoring, habitat for the recovery and long-term survival of the spotted owl. The 2011 Recovery Plan relies on Federal lands to provide the major contribution for recovery (USDI Fish and Wildlife Service 2011).

The 2011 NSO Revised Recovery Plan (RRP) was published in June 28, 2011 (USDI 2011) and replaces the 1992 Draft Recovery Plan which had been used as a foundation for the 1994 Northwest Forest Plan, and the 2008 Final Recovery Plan. The 2011 RRP identifies three main threats to NSO (1. competition with barred owls; 2. ongoing loss of spotted owl habitat as a result of timber harvest, habitat loss or degradation from stand-replacing wildfire and other disturbances; and 3. the loss and reduced distribution of spotted owl habitat due to past activities) and describes a Recovery Strategy which includes habitat conservation and active forest management as a means by which to address these threats. As a result, the RRP identified a series of Recovery Actions to guide activities that would contribute to recovery objectives.

Northern Spotted Owl Revised Critical Habitat

On December 4, 2012, the Final 2012 Northern Spotted Owl Critical Habitat rule was published (77 Fed Reg. 71876-72068). Critical habitat consists of those areas which have “physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection.” 16 U.S.C. § 1532(5) (A). In total, approximately 9,577,969 acres (ac) (3,876,064 hectares (ha)) in 11 units and 60 subunits in California, Oregon, and Washington fall within the boundaries of the Critical Habitat designation Federal agencies are required to consult on any project that may affect newly designated Critical Habitat under the ESA. The rule became effective on January 3, 2013.

Recovery Goals and Actions consistent USFS laws and regulations. Three recovery actions (RA) are pertinent to the proposed action (RA10, 12, 32) (Table 2).

Table 2. NSO Recovery Actions applicable to Plaskett-Keller Salvage.

Recovery Action	Description	Applicable Recommendations
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10	<i>Conserve spotted owl sites and high value spotted owl habitat to provide additional demographic support to the spotted owl population</i>	<p>Intent of this recovery action is to protect, enhance, and develop habitat in the quantity and distribution necessary to provide for the long-term recovery of spotted owls.</p> <p>This project did not identify treatments based on habitat conditions because it is a fire salvage project. For the purpose of this analysis, sites were not prioritized for treatments or conservation, rather all NSO sites are assumed occupied with potential to contribute to demographics of the local population unless otherwise indicated due to extreme impacts from high severity fire. Proposed salvage activities will not downgrade or remove existing NRF or dispersal habitat.</p> <p>Project design criteria (DC) have been incorporated to retain large legacy snags and large down wood that may contribute to future high quality habitat. See snag and down woody requirements in the proposed action. Forests biologists have marked numerous wildlife snags to be retained for future NSO use throughout commercial salvage units.</p>
12	<i>In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood)</i>	<p>Intent of this recovery action is to focus on conserving and restoring habitat elements that take a long time to develop in areas that are important to spotted owl conservation. These elements include legacy components, large trees and snags, and large downed wood for the benefit of future stand development.</p> <p>Project design criteria and the Mendocino LRMP have been incorporated to retain large legacy snags and down wood that provide important habitat components in a developing stand of future suitable habitat and will contribute to future large woody debris. Late Successional Reserves would not be treated in this project.</p>
32	<i>“Maintaining or restoring forests with high-quality habitat will provide additional support for reducing key threats faced by spotted owls” and “Protecting these forests should provide spotted owls high-quality refugia habitat from the negative competitive interactions with barred owls that are likely occurring where the two species’ home ranges overlap. Maintaining or restoring these forests should allow time to determine both the competitive effects of barred owls on spotted owls and the effectiveness of barred owl removal measures”.</i>	<p>The definition of NSO habitat used for this project was based on the definition found in the MNF LRMP and field verified by biologists. The LRMP definition was based on the extensive amount of published literature and represents the best available science for the Mendocino habitat types.</p> <p>Field verification of the units conducted by the forest service biologists determined that many of the treatment units occurred in high severity burned areas with almost complete canopy loss. Late succession reserves and nest groves would not have commercial salvage treatment occurring. Approximately 4 acres of nest groves that overlap with roadside units could be potentially removed from MEN0019. The remaining high quality nesting and roosting habitat is not expected to be removed or downgraded.</p>

While recovery plans are not regulatory documents and are not required to be addressed as a part of Section 7 consultation under the ESA, the Forest Plan Standards and Guidelines state that,

“Management activities will comply with species recovery plans (threatened and endangered species) and habitat management plans, as they apply to the Mendocino National Forest.” (Wildlife & Fish S&G 2) and that the forest will “Coordinate with California Department of Fish and Game, U.S. Fish and Wildlife Service, and other concerned agencies in the preparation and implementation of Federal and State Endangered Species recovery plans...” (Wildlife & Fish S&G 17a).

III. DESCRIPTION OF PROPOSED ACTIONS

Background

In August 2020, lightning ignited the August Complex wildfires, scorching 1,032,600 acres of private lands and riparian and upland forest habitats administered by the Six Rivers, Shasta-Trinity, and Mendocino national forests. The Mendocino burned 612,217 acres of national forest. In response, staff from the three (3) national forests organized to compile post-fire natural resource information and identify land management opportunities based on public engagement and field-based data collection, described in the August Fire Complex Vegetation & Resource Rapid Assessment (December 2020).

A 3-Forest (Mendocino, Shasta-Trinity, Six-River) Rapid Assessment was conducted for the August Complex fire area to (1) evaluate short-term post-fire restoration opportunities, public safety, cultural, natural resource concerns, and (2) integrate the short-term strategy with medium- to long-term strategic management of the post-fire landscape across Forest boundaries. The [Rapid Assessment](#) can be downloaded at:

<https://www.fs.usda.gov/detail/mendocino/home/?cid=FSEPRD860382>.

Upon review and further refinement of the 3-Forest Rapid Assessment, the Mendocino National Forest determined that the Assessment’s Smokey-Hardin Focus Area (renamed Plaskett-Keller to avoid confusion with previous projects named Smokey and Hardin) with its diverse range of critical resources would benefit most from post-fire recovery projects. The Plaskett-Keller proposed project area crosses multiple jurisdictional lines (ranger districts, counties, and land ownership) and is an excellent area for partnerships and collaboration of land management. It also contains several campgrounds and major roads used frequently by the public and Forest Service staff. Part of this Focus Area falls within the Black Butte Watershed, identified within the [MNF Land and Resource Management Plan \(LRMP\)](#) (https://www.fs.usda.gov/detailfull/mendocino/landmanagement/planning/?cid=fsbdev3_004518&width=full) as a key watershed. Additionally, the reach of Black Butte River adjacent to the Plaskett-Keller project area is a congressionally designated Wild and Scenic River, based on its outstandingly remarkable values of fisheries, geology, and culture (prehistory and traditional use). The Black Butte River is also designated critical habitat for steelhead.

Removing some fire-killed and severely damaged trees is essential to provide for public safety, to provide safe access to recreational opportunities, and prepare the area for restoration efforts, while protecting the infrastructure and roads. These fire-impacted trees (including killed and severely

damaged) deteriorate due to weather, insect activity, and decay from fungi and lose their structural integrity, causing them to suddenly fall and create safety hazards. Additionally, deterioration causes the economic value of timber to decline rapidly. Delaying implementation beyond the 2022 operating season would potentially convert the timber to a non-merchantable biomass, essentially preventing the economic removal of the trees and subsequent reforestation efforts, contributing to excessive future fuel accumulation.

Untreated, heavy accumulations of surface fuels are highly likely to exacerbate future fire behavior, jeopardizing remaining adjacent unburned areas, and reduce our ability to implement prescribed fires. Heavy fuel loading also hinders successful reforestation efforts, and in case of a re-burn, may prevent or reduce natural regeneration. From a fuels management perspective, the cost of removing woody material later is also considerably higher than treating it earlier (often beyond what we can afford).

Purpose and Need

Fire has always been a part of the Mendocino National Forest. Historically, low- to moderate-intensity wildfires tempered forest densities and allowed for a diversity of vegetative species at various stages of growth. This, in turn, supported an array of wildlife and forest uses. More recent fires, however, have burned hotter and consumed more acreage than ever recorded. The 2018 Ranch Fire and 2020 August Complex, for example, collectively burned 939,311 acres (87.6% of the administrative area) within the Mendocino National Forest. Almost half of those acres (423,850 acres) burned at a “high” severity classification, meaning 75 to 100 percent of vegetative cover was lost (see figure 6).

In these severely burned areas, large swaths of trees across all species and age classes were killed. Too far removed from surviving trees that could aid in reforestation, these areas are unlikely to return to their prior states and provide the same ecological benefits to the wildlife and users who depended on them (North et al. 2019). Furthermore, a growing body of research shows that these severely burned areas, if left untreated, create conditions that fuel future high-intensity wildfires (Lydersen et al. 2019).

GTR-270, Postfire Restoration Framework for National Forests in California (USDA, 2021), concluded that “In California montane forests, shrub recruitment after high-severity fire is substantial, and the high flammability and continuity of postfire shrub-fields (also called montane chaparral) lead to a tendency for such sites to continue to support high-severity burning in subsequent fires. Such severe reburns can greatly inhibit conifer regeneration and lead to a persistent conversion away from conifer forest (so-called type conversion) (Coppoletta et al. 2016, Lauvaux et al. 2016, Tepley et al. 2017). This pattern is likely to be exacerbated as the climate warms and seasonal and annual droughts become more severe (Tepley et al. 2017, Welch et al. 2016).”

The Plaskett-Keller August Complex Phase 1 Project is being proposed as a first step, Phase 1, in response to the land management challenges caused by the August Complex, while also meeting resource direction set forth by Congress in the 1897 Organic Act, 1960 Multiple-

Use Sustained-Yield Act, and 1976 National Forest Management Act. In compliance with the Code of Federal Regulations [36 CFR 220.7(b)(1) and 40 CFR 1508.9(b)], this section describes the needs for the project.

Note: While Phase 2 projects have not been explicitly identified, it is the Forest's intent to pursue projects such as reforestation, terrestrial and riparian habitat improvements, fuels reduction, and so forth. These projects would be analyzed separately from this project under NEPA. The Forest may also use GTR-270 ([Postfire Restoration Framework for National Forests in California](#)) to help finalize Phase 2 projects.

1. To provide for employee and public safety in preparation for future reforestation activities and public use.

Proposed actions will target areas with high concentrations of fire-killed trees, as well as roadsides and facilities used by the public. Severely burned areas unlikely to naturally regenerate to a forested state will need future land management interventions, primarily in the form of reforestation. Removing fire-killed and -injured trees would make room for future seedlings, as well as to reduce the potential for trees falling and striking workers performing the reforestation activities. Similarly, removing fire-killed and -injured trees along roadsides and recreation facilities would reduce falling hazards posed to forest visitors.



Figure 1. Underburned large diameter snag and fir tree directionally felled following fire to avoid striking Forest Highway 7. Photo by Emily Dolhansky, 3/5/2021.

2. To mitigate future wildfire severity by reducing dead fuel levels and effects to values at risk (including but not limited to: remaining green stands, water quality, wildlife habitat and WUI) by reducing dead fuel loading and managing for stands that are

more fire resilient. A fire resilient landscape allows for more successful and safe fire suppression responses and prescribed burning activities.

While dead trees are a natural part of the forest ecosystem, inordinate amounts of dead trees, either as standing snags or downed logs, can increase wildfire severity (Stephens et al. 2018). Meanwhile, severely burned areas that are not reforested tend to be replaced by shrubs and other low-lying vegetation that is more easily ignited by fire and susceptible to transferring wildfire from the ground to taller vegetation (Stephens et al. 2020). Reducing the concentration of standing dead trees reduces the risk of these trees falling and striking firefighters during future suppression activities. Placing treatment areas in locations that can strategically slow a wildfire's advance or diminish its intensity (such as a shaded fuel break along a ridgeline) can prepare the landscape today to better handle wildfire in the future (Collins et al. 2010).



Figure 2. Standing fire-killed trees and hazardous falling fire-killed trees in the project area near unit 272. Photo by Ryan Mikulovsky, 5/6/2021

3. To contribute to the Forest Service's Congressional directive of furnishing a continuous supply of timber for the use and necessities of the people of the United States.

Since the establishment of the Nation's first national forest reserves, Congress has placed on the Forest Service the unique responsibility of furnishing a "continuous supply of timber for the use and necessities of the people of the United States" (Organic Act 1897). When not compromising the long-term sustainability of other natural resources, timber production is a recognized output of national forests (Multiple-Use Sustained-Yield Act 1960). Furthermore, revenue generated through commercial timber sales can be used to fund activities within the sale area that further ecological function and sustainability (National Forest Management Act (NFMA) 1976).

Achieving land management objectives through timber sales is also prudent stewardship of taxpayer dollars. Removing trees is a time-consuming and labor-intensive endeavor. Based on recent contracting figures, for the Forest Service to perform this work (cutting, decking, or piling dead trees), it would cost an estimated \$2,000 per acre. Making the trees available for commercial harvest not only frees up Forest Service staff time and financial resources, it supports the economic well-being of communities (NFMA 1976).

To reduce the concentration of fire-killed and fire-injured trees within the project area, Mendocino National Forest staff are proposing making a portion of the trees available for harvesting through a timber sale, a practice commonly referred to as "salvage logging." All the treatment areas exist on lands designated as available for harvesting and other silvicultural practices ("Matrix Lands") through the Mendocino Land and Resource Management Plan as amended with the Northwest Forest Plan (USDA 1995, pg. IV-38). Specialist reports in this environmental assessment detail the measures planned to protect natural resources likely to be impacted by the proposed actions.



Figure 3. Fire-killed stand of trees in unit 26. This is representative of 75-100% basal area loss.
Photo taken on 4/21/2021 by Ryan Mikulovsky.

4. To further the scientific understanding of short- and long-term effects of salvage logging.

The Mendocino National Forest is partnering with the Forest Service’s Pacific Northwest Research Station to study the short- and long-term effects of salvage logging. Research plots randomly assigned throughout the project area will be used to compare revegetation and fuel accumulation among sites that were fully salvaged, partially salvaged, and not logged. Short- and long-term monitoring and reporting of these effects will provide land managers with a more robust understanding of the impacts of this practice.



Figure 4. Underburned large diameter snag and fir tree directionally felled following fire to avoid striking Forest Highway 7. Photo by Emily Dolhansky, 3/5/2021.

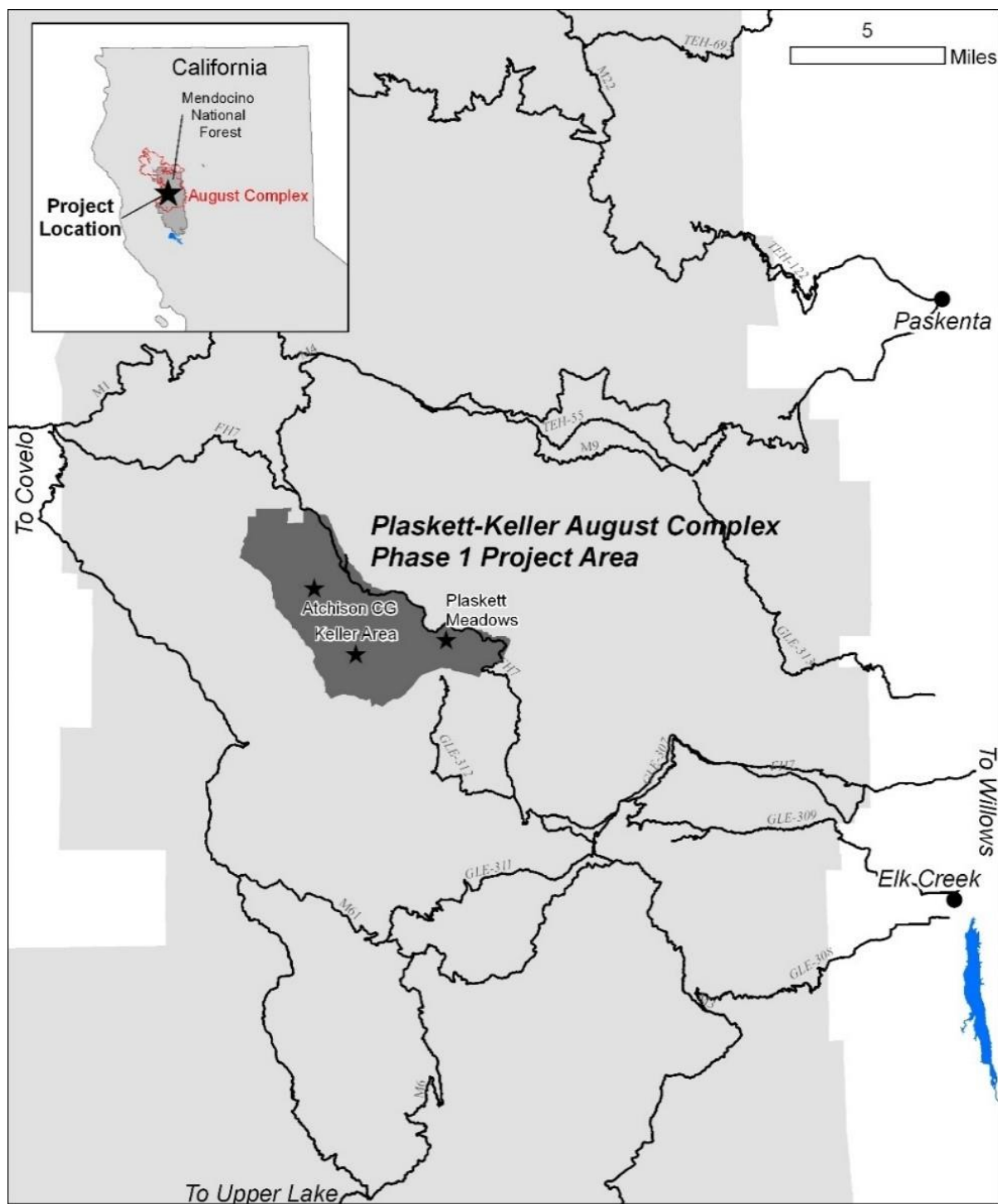


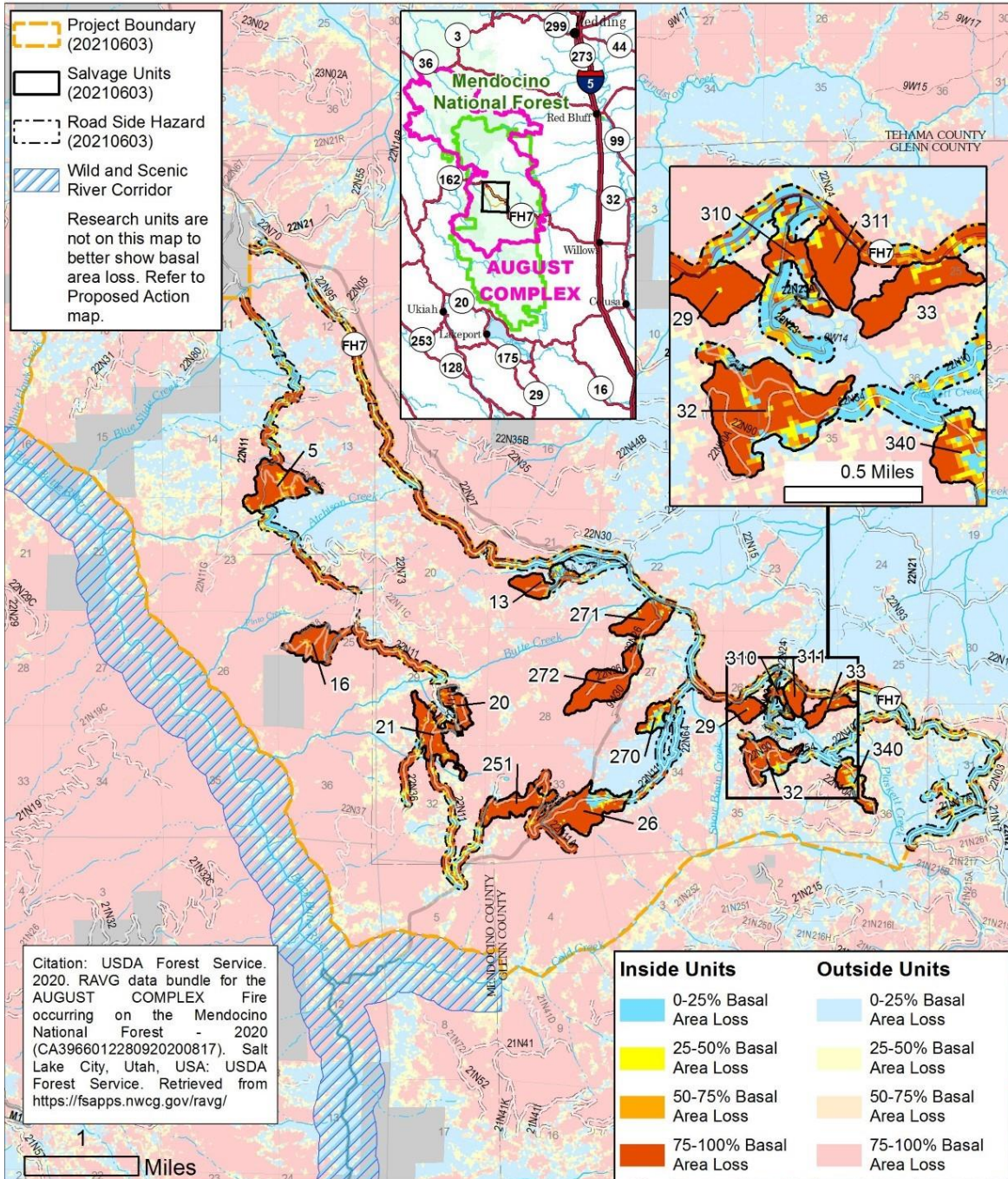
Figure 5. Vicinity map of the Plaskett-Keller Project Area



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Plaskett-Keller August Complex Phase 1 RAVG Basal Area Loss (Alternative 1)



Mendocino National Forest
Pacific Southwest Region

Figure 6. RAVG Basal Area Loss Classes (USDA Forest Service, 2020a) and Plaskett-Keller Phase 1 Complex Project Area. This map is shows Alternative 1, but it also applies to Alternative 3 (action alternative).

Project Location

The project is located about 15 miles east-southeast of Covelo and 36 miles west-northwest of Willows. The project area is 15,061 acres although treatments would only occur on less than 2,200 acres. The project includes Plaskett Meadows and Keller Lake to the south and extends north to Mendocino Pass. The Black Butte Wild and Scenic River (WSR) corridor is excluded from the project boundary and activities. The closest activity units are at least 0.4 miles from the WSR the corridor. The project is located in Mendocino and Glenn Counties, California in all or portions of T22N R10W Sec 10, 11, 12, 13, 14, 15, 16, 17; T22N 9W Sections 22, 23, 24, 25, 26, 27, 28, 29, 32, 33, 34, 35, 36; T22N R8W Section 3; T21N R9W Sec. 1, 3, 4, 5.; MDBM (See attached map package document).

The project is located within the Black Butte River watershed, which is identified as a key watershed under the Mendocino National Forest Land and Resource Management Plan (LRMP). In general, the Black Butte watershed has a Mediterranean climate that is mild, with cool, occasionally cold, wet winters and hot, dry summers. There is some coastal influence but little to no summer fog. Winter low temperatures near the mouth of the Black Butte River are generally above 20 degrees Fahrenheit, while summer high temperatures are usually just above 100 degrees Fahrenheit, with occasional extremes outside this range. Average annual precipitation is about 60 inches a year, ranging from 38 inches at the mouth of the Black Butte River to over 70 inches near Bald Mountain. Over 80 percent of the seasonal rainfall occurs between November 1 and April 1. Snow occasionally falls below 2,500 feet, but it seldom builds up any significant snowpack below 5,000 feet. Most of the major valleys are free of snow year-round. June, July, and August are typically very hot and dry.

The Black Butte River is often turbid, particularly during seasonally high runoff. Late-season runoff can extend into April, May, and June. The stream flow is unregulated by any dams or diversions, and the river responds quickly to snowmelt and rainstorms. The topography within, and adjacent to, the Black Butte River consists of a series of ridges running southwest to northeast, with slopes varying from nearly level to greater than 30 percent. The Black Butte River's inner gorge is challenging to explore. The general trend of the gorge is roughly parallel to the San Andreas Fault, which helps to shape much of California's topography. The major fault zone is about forty miles to the west of the Black Butte River. The related lesser-known Bartlett Springs Fault Zone is 4-7 miles away to the west and is a subject of research by the United States Geological Survey and the California Geological Survey. Both fault systems can produce earthquakes that can trigger landslides and rockfall. The watershed's inner gorges are narrow, with steep sides that are dominated by debris slides. The river's erosive waters carry higher rates of suspended sediments than most rivers of the world. This is characteristic of the entire Eel River system.

These high sediment rates are due to a combination of factors, including very high annual rainfall, easily eroded sedimentary rocks in the basin, and its many streambank landslides. Two lakes are located within project boundaries (but not within project units); Keller and Plaskett Lakes. Keller Lake is a small wetland habitat on the southwestern flank of Black Butte peak and contains sphagnum peatland as well as an area of open water. Plaskett Lakes are naturally occurring, but the outflows have been artificially raised to retain water longer in the season.

Plaskett Meadows are a botanically rich area with many uncommon native plant species. Additional details on these areas can be found in the Botany section.

The predominant vegetation cover for the project area is mixed conifer and hardwood forest. Records dating back to 1960 show the project area had limited management, with approximately 2,000 acres total of silviculture or fuels-related work. Only seven wildland fires burned between 1980 and 2020. Prior to the 2020 August Complex, recorded fires were all under 250 acres in size. The 215-acre Baseball fire in February 2020, was the last notable fire in the project area prior to the August Complex

Proposed Action and Alternatives

Proposed Action (Alternative 1)

Mendocino National Forest staff propose roadside hazard tree abatement and salvage of fire-killed and fire-injured trees using the Marking Guidelines for Fire-Injured Trees in California (Smith and Cluck 2011 (amended 2021)) and Hazard Tree Guidelines for Forest Service Facilities and Roads in the Pacific Southwest Region (Angwin et al. 2012) in the Plaskett-Keller project area (see **Error! Reference source not found.**). Fuels treatments for smaller trees and vegetation include thinning, piling, burning, chipping, and mastication. All Late Successional Reserves (LSRs) will be avoided from any direct project activities. Salvage, hazard tree abatement, and fuels treatments will be performed only on lands designated as “matrix” within the LRMP as amended by the Northwest Forest Plan, meaning these areas are available for timber harvesting and other silviculture activities. Salvage units will focus on areas with high burn severity with a high chance of mortality. Table 3 compares the Rapid Assessment of Vegetation Condition after Wildfire (RAVG)’s basal area loss for salvage and roadside units. The Silvicultural section of this EA describes the RAVG basal area loss product. **Error! Reference source not found.** shows the RAVG basal area loss classifications with project units. The RAVG product does not include the Soil Burn Severity (SBS) product, which is discussed elsewhere in this document.

Table 3. Rapid Assessment of Vegetation Condition after Wildfire (RAVG) Basal Area Loss and Proposed Action Acres

RAVG Basal Area (BA) Loss Class (USDA Forest Service 2020a)	Project Area * Acres (%)	Salvage Units Acres (%)	Roadside Acres (Salvage) (%)#	Roadside Acres (Fuels) (%) #
Unburned-Low Severity (0-25% BA loss)	3,147 (21%)	56 (6%)	39 (17%)	455 (46%)
Low Severity (25-50% BA loss)	1,472 (10%)	47 (5%)	23 (10%)	129 (13%)
Moderate Severity (50-75% BA loss)	1,396 (9%)	64 (7%)	30 (13%)	103 (10%)
High Severity (75-100% BA loss)	9,046 (60%)	777 (82%)	137 (60%)	304 (31%)

Total (acres)	15,061 (100%)	944 (100%)	229 (100%)	991 (100%)
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*The project area is defined as the project boundary that encompasses all of the proposed project units. This is different than the action area for NSO analysis (as they is defined using a 1.3 mile buffer around the proposed treatment units). See figure 6 for the map of the project boundary.

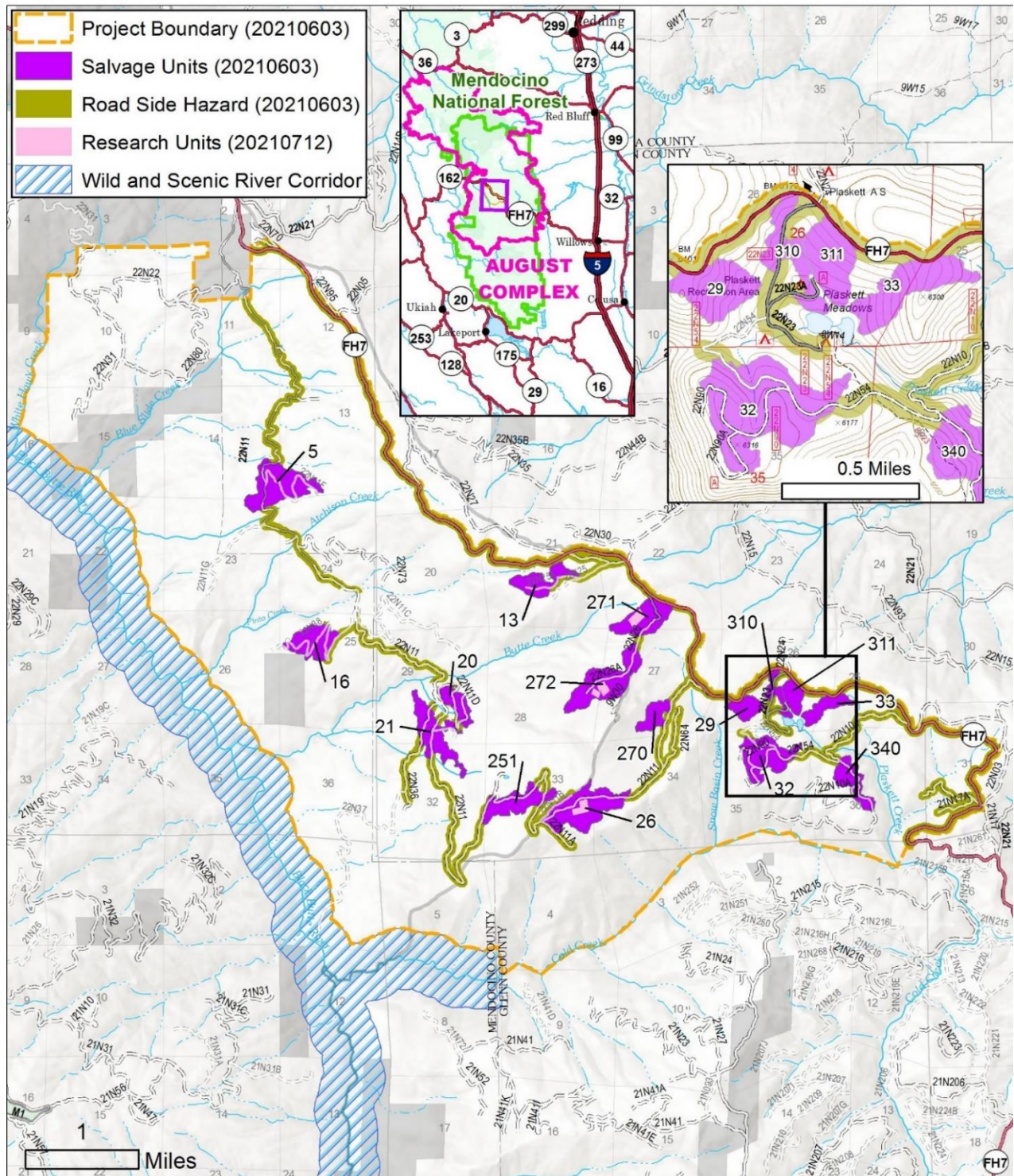
#Where salvage, roadside and fuels treatments occur in low and moderate burn severity, NSO suitable habitat is present. However, the probability mortality prescriptions are specific to each unit and only those trees would be removed. Dead and dying trees would still be the target even in unburned and low severity acres in treatment units.



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Plaskett-Keller August Complex Phase 1 Proposed Action (Alternative 1)



Mendocino National Forest
Pacific Southwest Region

Figure 7. Proposed Action map for Plaskett-Keller Project. Dim or low contrast roads are level 1 roads.

Salvage Units — 944 acres of salvage units are proposed. Merchantable dead and dying trees would be salvaged. It is a project objective to retain trees that are likely to survive without compromising public safety. The Forest Service would follow the Pacific Southwest Region’s standardized report #RO-11-01, “Marking Guidelines for Fire-Injured Trees” (Smith and Cluck 2011). Different mortality probabilities, would be used, depending on proximity of salvage units to campgrounds, residences, or roads. The logging system would be ground-based and may include tethered (winch-assisted) logging.

Unit 310 (Plaskett Campground) would receive the most intensive treatments due to long-term safety concerns for the public, Forest Service staff, and contractors. Trees would be marked at 50 percent probability mortality to emphasize safety and limit the need for future removals at the highly used campground. The Plaskett Campground is ranked number three in terms of popularity of use on the Grindstone District during its season (Memorial Day through Oct 31).

Units adjacent to high-use areas, such as near FH7 (units 29, 33, 311), the Snow Basin recreation residence tract (unit 270), and popular dispersed use areas (units 271, 13), would be marked at 70 percent probability of mortality. This emphasizes safety and would limit the need for additional future removals. This treatment would achieve fuel reduction goals along ridgetops and in recreation infrastructure.

For remaining interior units (5, 16, 20, 21, 26, 251, 272), only 100 percent dead merchantable trees at implementation would be salvaged. Only completely scorched trees with no green needles left would be harvested.

Table 4. Salvage harvest treatment.

Unit #	Acres	Treatment Type	AC overlap	CHU Overlap
5	101.6	Salvage Harvest/Fuels Reduction	MEN0019	None
13	50.86	Salvage Harvest/Fuels Reduction	GLE0002	None
16	63.49	Salvage Harvest/Fuels Reduction	MEN0019	None
20	34.44	Salvage Harvest/Fuels Reduction	GLE0002, GLE0025	ICC4 Unit 11
21	76.08	Salvage Harvest/Fuels Reduction	GLE0002, GLE0025	ICC4 Unit 11
26	113.66	Salvage Harvest/Fuels Reduction	GLE0001, GLE0002, GLE0025	ICC4 Unit 11
29	29.33	Salvage Harvest/Fuels Reduction	GLE0001	None
32	80.78	Salvage Harvest/Fuels Reduction	GLE0001	ICC4 Unit 11
33	33.34	Salvage Harvest/Fuels Reduction	None	None
251	63.71	Salvage Harvest/Fuels Reduction	GLE0002, GLE0025	ICC4 Unit 11
270	30.95	Salvage Harvest/Fuels Reduction	GLE0001	None
271	67.63	Salvage Harvest/Fuels Reduction	None	ICC4 Unit 11
272	103.17	Salvage Harvest/Fuels Reduction	GLE0002, GLE0025	ICC4 Unit 11
310	29.41	Salvage Harvest/Fuels Reduction	None	None
311	25.85	Salvage Harvest/Fuels Reduction	None	None
340	47.29	Salvage Harvest/Fuels Reduction	GLE0001	ICC4 Unit 11
Total Acres	944			

An estimated 2.5 miles of temporary roads (non-system roads) may be needed, 1.5 miles of which could be new construction. The remainder 1 mile would be reconstruction of old temporary roads. For maps of potential temporary roads in the project area, refer to the environmental assessment (USDA 2021). The temporary roads have been included as part of resource analyses and design features. They are typically restored and stabilized within one year of completion of implementation. While these locations are our best estimate, it is up to the purchaser and sale administrator to determine whether they are needed. Actual placement of the locations may vary slightly based on specific needs.

Potential landings have been identified and are included as part of resource analyses.

*Late Successional Reserve (LSR) disclaimer: In process of finalizing the boundaries for the project on the ground, efforts were made to exclude all established 100-acre LSR boundaries from the proposed treatment. However, due to the inherent errors in precision and accuracy of GPS equipment used, some unintended overlap occurred when tracking the map boundaries on the ground. These errors are negligible in size (0.52-acre total), and our intent is to exclude salvage within those 100-acre LSR areas. Only unit 251 has 0.3 acres of intentional overlap with 100-acre LSR. Part of that's unit edge was placed along a pre-existing skid trail that is just inside the boundary of a 100-acre LSR. Trees do not need to be cut from the skid trail to use it. The ability to use the 280 feet of existing skid trail would help reduce ground impacts when accessing the unit.

Roadside Hazard — Mendocino National Forest staff will follow the Pacific Southwest Region's standardized report #RO-11-01 for "Marking Guidelines for Fire-Injured Trees in California" (Smith and Cluck 2011 (amended 2021)). Trees within the 70 to 100 percent mortality classes would be targeted for removal. Trees within striking distance of the road (typically 1.5 tree height or approximately 200 feet) will be targeted for removal. Staff will follow guidelines the #RO-12-01 Hazard Tree Guidelines for Forest Service, Facilities and Roads in the Pacific Southwest Region (Angwin et al. 2012). Roadside hazard treatments would target forest roads heavily used by the public (e.g., FH7 and 22N11). These roads are used for travel and commuting purposes or lead to developed or undeveloped recreation sites. Approximately 30 miles of road are included in hazard tree abatement activities and account for about 1,220 acres of National Forest System lands. **Of this, 229 acres have been identified for roadside salvage. The remainder 991 acres would be non-commercially treated.**

Level 1 roads (USDA 2012a) would not be treated or used unless needed to access salvage units (units 5, 16, 21, 13, 26, 32). Maintenance level 1 roads are physically closed to motor vehicle use. These roads provide for long-term management access, but day-to-day, are generally not used. Level 1 roads leading into units 5, 13, 16, and 26 would require little to no tread work to improve the roads, as they are currently passable and hydrologically stable. Level 1 roads leading into units 26 and 32 would require some tread work (grading, brushing, and filling of holes) for a logging truck. The level 1 road leading into unit 21 (22N11K) would require up to 0.5 mile of tread work to accommodate for implementation activities. For maps of level 1 and higher roads in the project area, see figures 26 and 27 in the Environmental Assessment (USDA 2021).

Merchantable trees would be harvested using a ground-based logging system and may include tethered (winch-assisted) logging. Nonmerchantable material would be addressed using various fuels treatments (see below).

Fuels Treatments — Fuels treatment would include mechanical thinning (which includes mastication) and piling, hand thinning and piling, pile burning and understory burning. These activities would be performed

within salvage and roadside hazard units and would help alleviate fuels buildup from any logging slash. Fuel accumulation would be reduced to no more than 10 tons/acre by removing merchantable timber and biomass and by burning slash piles.



Figure 8. Stand of relatively dense fire-killed small diameter trees in the project area.
Photo taken by Frank Alves, March 2021.

Table 5. Roadside hazard tree removal treatment and roadside fuels treatment.

Road #	CHU Overlap	AC Overlap	Maintenance Category	Treatment Type
21N17	None	GLE0011	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
21N17A	None	GLE0011	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N10	None	GLE0001	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N11	ICC3 Unit 11, ICC4 Unit 11	GLE0002, GLE0025, MEN0019	2 – High-Clearance Vehicles, 3 – Suitable for Passenger Vehicles	Hazard Tree Removal/Fuels Reduction
22N11A	None	GLE0002, GLE0025	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction

Road #	CHU Overlap	AC Overlap	Maintenance Category	Treatment Type
22N11B	None	GLE0002, GLE0025	1 – Basic Custodial Care (not open to public)	Hazard Tree Removal/Fuels Reduction
22N11C	None	MEN0019	1 – Basic Custodial Care (not open to public)	Hazard Tree Removal/Fuels Reduction
22N11D	ICC4 Unit 11	GLE002, GLE0025, MEN0019	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N11E	None	MEN0019	3 – Suitable for Passenger Vehicles	Hazard Tree Removal/Fuels Reduction
22N11G	None	MEN0019	3 – Suitable for Passenger Vehicles	Hazard Tree Removal/Fuels Reduction
22N11M	None	None	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N11N	None	None	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N13	ICC3 Unit 11	GLE0004	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N17	None	GLE0011	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N23	None	GLE0001	3 – Suitable for Passenger Vehicles	Hazard Tree Removal/Fuels Reduction
22N23A	None	GLE0001	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N25	None	GLE0002	1 – Basic Custodial Care (not open to public)	Hazard Tree Removal/Fuels Reduction
22N25A	None	GLE0002	1 – Basic Custodial Care (not open to public)	Hazard Tree Removal/Fuels Reduction
22N26	None	None	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N36	ICC4 Unit 11	GLE002, GLE0025, MEN0019	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N38	None	MEN0019	1 – Basic Custodial Care (not open to public)	Hazard Tree Removal/Fuels Reduction
22N54	ICC4 Unit 11	GLE0001	1 – Basic Custodial Care (not open to public)	Hazard Tree Removal/Fuels Reduction
22N70	None	GLE0023	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N70A	None	None	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction

Road #	CHU Overlap	AC Overlap	Maintenance Category	Treatment Type
22N73	None	MEN0019	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
22N64	ICC4 Unit 11	GLE0001	2 – High-Clearance Vehicles	Hazard Tree Removal/Fuels Reduction
FH7	ICC3 Unit 11	GLE0011, GLE0001, GLE0002, MEN0019, GLE0023, GLE0004, GLE0003	County Road	Hazard Tree Removal/Fuels Reduction

Research— When the Mendocino National Forest Land and Resource Management Plan (LRMP) was written, its Appendix B listed some research and technical needs for the forest (USDA 1995, Appendix B, pp. B-1,-B-3). Today we recognize those needs have changed and so we have included research for post-fire management. To promote research opportunities on the effects of large fires and post-fire management, this project proposes both current and possible future research.

One such research project is being developed by the Pacific Northwest Research Station (PNW) Pacific Wildland Fire Sciences Laboratory. This research will establish a replicated, longitudinal study investigating the effects of post-wildfire salvage logging and will include a series of permanent research plots. The research plan contains three prescriptions: RX1- passive management (control, no action), RX2- Salvage activities from proposed actions, RX3- remove only small diameter trees (under 20.9” DBH).

Research opportunities to study the effects of large, high-intensity fires and restoration treatments on wildlife, conifer seed dispersal, tree recruitment, soil erosion, and fuel accumulation are abundant within the August Complex Fire perimeter. If a salvage sale is unsuccessful, then a service contract or other means may be used to replicate salvage logging activities. Units with plots would be treated by deck/pile and burn, mastication, chipping or a combination of such activities.

Plots covering no more than 23.1 acres (total) will be set up within harvest stands to measure the effects of retaining various levels of standing dead within salvaged areas.

Design Features— In addition to the proposed action, design features and Best Management Practices (BMP’s) have been developed to protect resources such as wildlife, hydrology, fish, soils, geology, cultural resources, and botany. For example, available slash will be used as surface cover (70 percent ground cover) to protect soil from erosion and to enrich it with organic matter. A full description in the design features can be found in Appendix B of the environmental assessment.



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Plaskett-Keller August Complex Phase 1 EA North Detailed Alternative 3 (Modified Proposed Action)

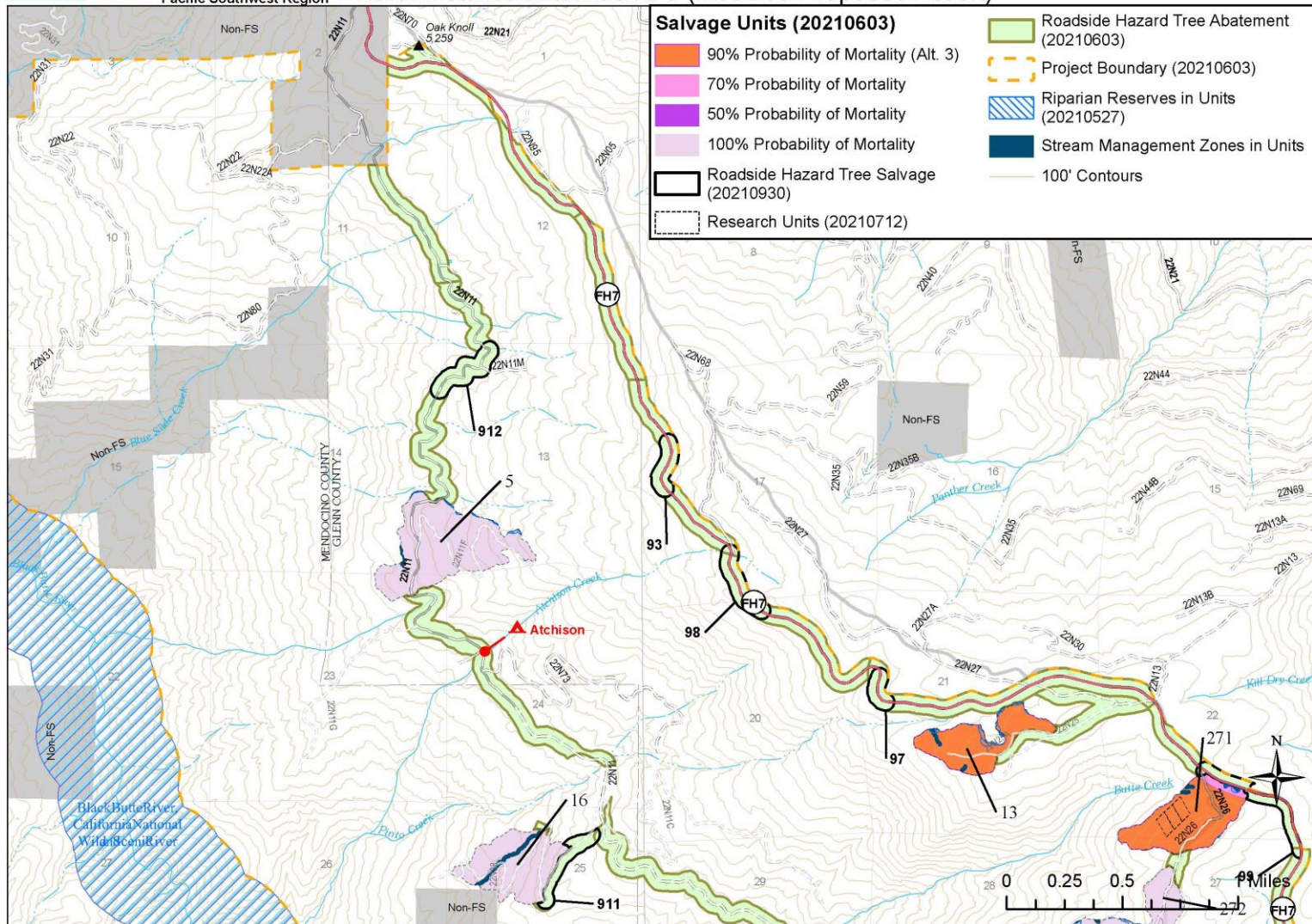


Figure 9 – Modified Proposed Action (Alternative 3), North



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Plaskett-Keller August Complex Phase 1 EA South Detailed Alternative 3 (Modified Proposed Action)

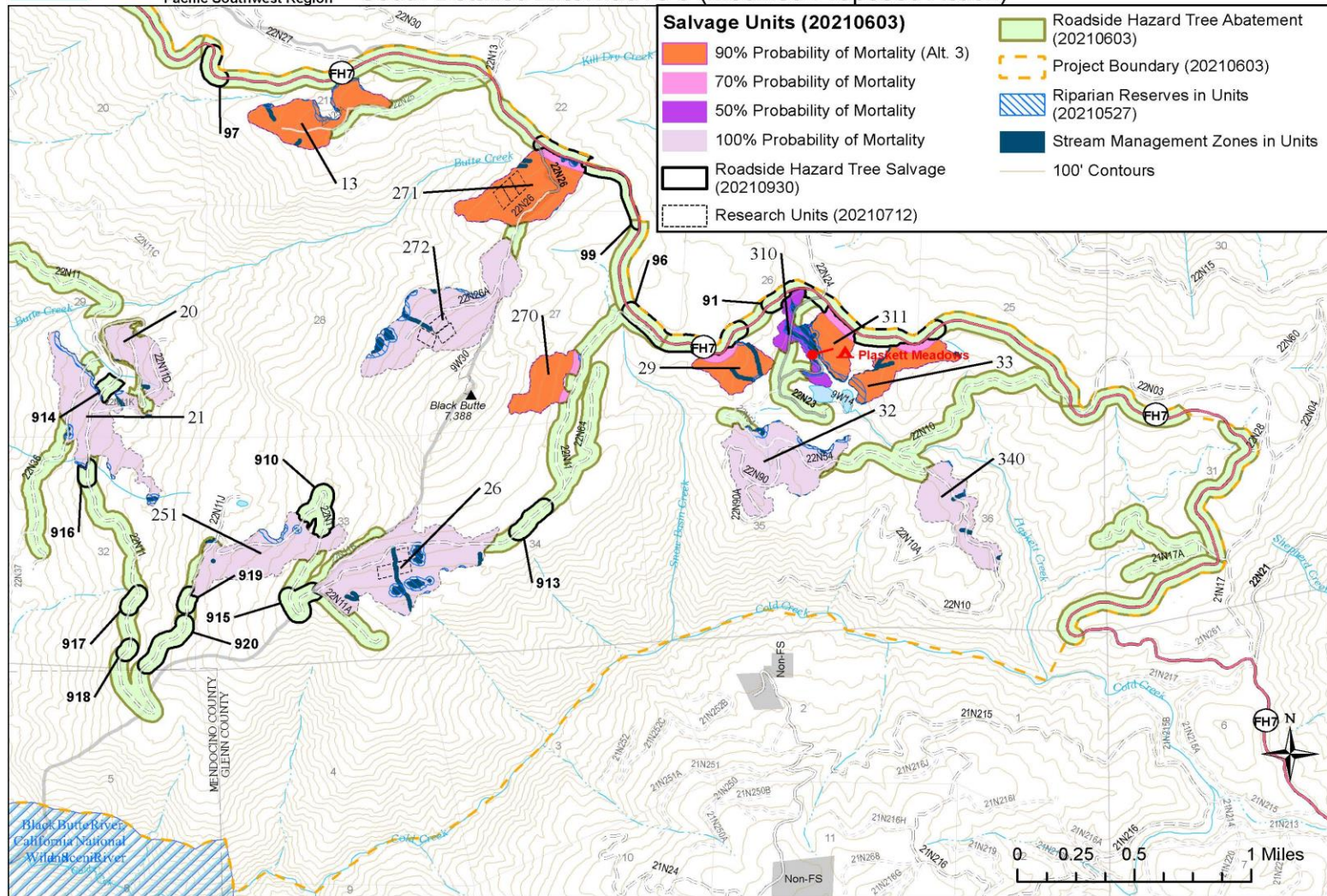


Figure 10 – Modified Proposed Action (Alternative 3), South

Alternatives

Alternative 1 is the unmodified Proposed Action (not implemented).

Alternative 2 is the No Action Alternative. Under the No Action alternative, none of the Proposed Action activities would be implemented.

Alternative 3 (**Modified Proposed Action**) was developed in response to comments received during the 30-day comment period. Commenters requested retention of trees that have even a small chance for survival, regardless of extent of fire injury.

Alternative 3 contains the same unit boundaries and activities as Alternative 1. No changes are proposed to Unit 310 (Plaskett Meadows Campground) and interior units (5, 16, 20, 26, 251, 272). However, the probability of mortalities in other units are further refined to retain more burned trees while providing for hazard tree mitigation (safety) along major roadways and other high-use areas. Units near FH7 (units 29, 33, 311), the Snow Basin recreation residence tract (unit 270) and popular dispersed use areas (units 271, 13) would be marked at 90 percent Probability of Mortality (Pm) instead of 70 percent. However, areas of those units within 1.5 tree heights or 200' from only roads FH7 and 22N11 would remain at Pm70 to more effectively address safety along roadways. Since unit 13 does not cross FH7 and is downslope of FH7 it would remain entirely at Pm90.

Alternatives Considered but Eliminated from Detailed Study

Removal of timber from roadside and campgrounds ONLY

This proposal came from initial project scoping, with a request to look at removing timber only from roadside and campgrounds. While this alternative would address most of the safety aspects of the purpose and need (No. 1), the interdisciplinary team did not think it adequately addressed safety needs of firefighters or individuals conducting future reforestation activities in areas away from roadsides or recreation sites. Limiting available timber for harvest to only roadsides and recreation areas would also decrease the likelihood of a viable timber sale, thereby negating purpose and need No. 3: recovering the economic value of dead and dying trees. Limiting the project area to only roadsides and campgrounds also would not allow enough area for appropriate statistical design of research plots supporting purpose and need No. 4. Furthermore, the research design requires untreated plots to serve as a “control” for comparison. This would mean pockets of roadside and campground hazards would be left on landscape.

Diameter Limit

A diameter limit was proposed by two respondents during scoping of this project. One respondent proposed not harvesting any trees larger than 14 inches diameter at breast height, while the other proposed that a limit be set at 20 inches diameter at breast height. Under these proposed alternatives, safety issues raised in purpose and need Nos. 1 and 4 would not be addressed since there are dead and dying trees above those diameter limits. This would be acutely problematic

considering the number of high-use recreation sites within the project area: two campgrounds, one day-use area, four nonmotorized trails, a recreation tract, and a number of popular dispersed camping areas. Furthermore, removing only smaller-diameter trees would not abate future fuel buildup concerns expressed in purpose and need No. 2, nor would it create a realistic sale to recover economic value of dead and dying trees as desired in purpose and need No. 3. Collections from a timber/salvage sale can be used to fund future restoration projects.

Researchers from the Pacific Northwest Research Station (PNW) Pacific Wildland Fire Sciences Laboratory, for the purposes of their larger study across multiple forests, have included a 20.9-inch diameter limit as one of their research design blocks (see Proposed Action, Research section) to measure the efficacy of a diameter limit on future fuels buildup.

Project Design Features and Mitigation Measures

The Mendocino National Forest developed the following design features applicable to wildlife and aquatic resources. They are intended to avoid, eliminate, or reduce unintended and undesirable effects of proposed activities. They are also included to ensure that the Projects are consistent with the Forest Plan, policy direction, and other laws and regulations. A full description of all Project's Design features can be found in the Decision Memo for this project.

Wildlife Resources

- Piles planned for burning should be lit only on one side (uphill side) to allow wildlife to escape.

Northern Spotted Owl (NSO):

- All treatments will maintain a minimum of four snags and four down logs per acre as per the Mendocino National Forest Land and Resource Management Plan.
- There will be no treatments in any 100-acre Late Succession Reserves (LSR) regardless of any current NSO habitat suitability.
- No commercial and roadside salvage treatments would occur in any NSO nest groves associated with ACs. All nest groves would be maintained post project.
- No new landings are to occur in any NSO suitable habitat. If new landings are needed, consultation with the district biologist would occur first.
- For phase 2 after this project, Post Fire Foraging (PFF) habitat proposed to be treated would be a focus for replanting.
- Post-implementation monitoring of all project units would occur in assessing NSO habitat.

Limited Operating Periods:

Northern Spotted Owl and Northern Goshawk: A limited operating period (LOP) for Northern spotted owls and Northern goshawks would be applied during breeding/nesting season (February 1

through July 31) for protection against disturbance or work within ¼ mile of an Activity Center or un-surveyed nesting/ roosting habitat.. Treatment areas with an LOP would require a 6-visit protocol survey or a 3-visit spot check just prior to implementation to release them from this restriction pending on whether the 2-year survey has been complete. If owls are located, additional visits would be required until nesting or non-nesting was confirmed. If nesting activity was confirmed, an LOP would remain.

- A limited operating period (LOP) will be imposed in all or part of unit 5, 20, 21, 251, 272, 32, 33, 311, 310 and 340 which are all within ¼ mile of northern spotted (NSO) Nest/ Roost habitat and active Activity Centers. Portions of roadside salvage along routes on the FH7, 22N11, 22N37, 22N23, 22N10, 22N54, 22N17, 22N17A will also have LOPs which are within ¼ miles of Nesting Roosting habitat and Active Activity Centers. No operations would occur in all of these units and along portions of these roads between February 1 and July 31 unless the owls are shown to be non-nesting.
- A limiting operating period (LOP) will be imposed for all landings and temporary roads that fall within ¼ mile of northern spotted (NSO) Nest/ Roost habitat or ¼ mile within an activity center.
- A limiting operating period (LOP) will be imposed for all Post Fire Foraging (PFF) habitat that fall within treatment units.

Marten, Fisher and Wolverine: An LOP would be applied within ¼ mile of any known or found marten, fisher or wolverine den sites from February 1 to June 30 for protection against noise disturbance.

American Peregrine Falcon: A LOP for peregrine falcons would be applied during the breeding /nesting season (February 1 through July 31) for protection against noise and smoke disturbance within ½ mile of a known nest if they are identified during pre-treatment surveys.

Pallid Bat, Townsend's Big eared bats or Fringed myotis: Pallid Bats, Townsend's Big eared Bats or Fringed myotis: An LOP would be applied within 300 feet of any rock outcrop or other known roost structure or site for pallid bats, Townsend's big eared bats or Fringed Myotis from May 15 to August 15 for protection against noise and smoke disturbance.

Snag Retention

Snags are important for a variety of species on the Mendocino National Forest including pileated woodpecker, hairy woodpecker, and other cavity nesting birds. Although there are plenty of snags post-fire available on the landscape it is important to locate and maintain the most viable snags for these species that will last for several years as it may be hundreds of years before there are snags available to replace these snags when they fall.

The Mendocino National Forest LRMP has a habitat capability model for snags and can be found in Appendix E (LRMP 1995). For this project we will be maintaining optimum snag habitat. The forest plan recommendations are described in table 5. The Mendocino will be looking to clump snags when possible as it is more suitable to the preference of woodpeckers to have snags closer

together. Hard to soft ratio for snags is not likely to be met as any soft snags were removed during the fire. If there are soft snags remaining and they do not pose a hazard they should be maintained. A variety of species of snags will be targeted.

Table 6 - Snag retention guidelines from the Mendocino Land and Resource Management Plan 1995 for Montane conifer

Habitat Variable	Optimum	Sub-optimum	Low
Average density			
...15-24" DBH	>3.0/acre	1.2-3.0/acre	<1.2/acre
...>24" DBH	>0.5/acre	0.2-0.5/acre	<0.2/acre
...Total	>3.5/acre (max 10/acre)	1.4-3.5/acre (max 5/acre)	<1.4/acre (max 3/acre)
Height	>40 feet	20-40 feet	<20 feet
Dispersion	One group per 5 acres or less, with 15+ snags	One group per 5-15 acres, with 5-15 snags	Even dispersion
Hard: Soft Ratio	>3:1	2:1-3:1	<2:1
Location	Edges of meadows, brushfields, streams, and other water	Throughout wooded stands	Rocky, open slope, Barren areas
Species	Douglas fir, Gray pine, Ponderosa pine, black oak, blue oak, madrone	White oak, live oak	

Course Woody Debris (CWD) Retention

Although the NSRP will remove some of the dead and down CWD from the project area there is a requirement to maintain 5 to 20 tons/acre of course woody debris comprised of a minimum of four recently downed logs per acre. When present, focus retention on logs equal to or greater than 20 inches in diameter (large end), or the largest diameter logs available. Retained logs should range from 15 to 20 feet in length, with one log per acre greater than 20 feet in length.

Fuels treatments propose leaving between 5 – 20 tons/acre of down course woody material. This amount was indicated to be the optimum quantity of CWD for wildlife in warm dry ponderosa pine and Douglas-fir types (Brown et.al 2003). Retaining this amount of CWD will allow the forest to maintain legacy components needed for forests to develop into stands that are variable and complex.

Water Drafting

Streams: Drafting from streams would require an LOP from March 15 to June 15 unless it is determined foothill yellow-legged frogs are not present or suitable habitat does not exist. This LOP may require an extension if larvae or eggs are located in the immediate vicinity of the drafting sites.

- If drafting out of fish bearing streams is deemed necessary, consultation must first occur with the district biologist.
- In-channel water drafting locations would include rocking of approaches and barriers of rock or sloping of drafting pads away from water source to prevent spillage at vehicle from returning to the watercourse.

Ponds/ Lakes: Drafting from ponds would require a minimum of 20" of water in the deep end of the pond be maintained at all times and would require the utilization of screen cover drafting devices (described below). Intake pipes should be placed within the deepest portion of a water impoundment.

- A Forest Service approved screen-covered drafting box, or other device to create a low entry velocity, would be used at **all designated drafting sites** to minimize removal of any aquatic species. Pump intake screens shall have openings not exceeding 3/32-inch (approximately 1/10 inch) and be sized according to the pump intake capacity. Place hose intake into bucket in the deepest part of the pool. Use a low-velocity water pump and do not pump natural ponds to low levels beyond which they cannot recover quickly (approximately one hour).
- Drafting may occur at Plaskett Lakes as it has been approved as a designated drafting site by the district biologist.

IV. EXISTING ENVIRONMENT – SPECIES ACCOUNT

The existing environment refers to the current conditions of the action area that would affect listed species and includes the past and present impacts of all Federal, State and private activities in the action area, along with the natural disturbance events and the in-growth of vegetation result in the current conditions. These current or existing conditions fully reflect the aggregate impact of all prior human actions and natural events that have affected the environment and have contributed to the environmental baseline. The existing environment also best represents the biological baseline relative to listed species for the analysis of project-related effects.

The Plaskett-Keller Complex Phase 1 boundary area is within the Black Butte HUC10 watershed. The watershed lies within three counties: Lake, Glenn, and Mendocino. The watershed encompasses 103,587 total acres. The Black Butte river originates in the southern end of the watershed and flows northwest 36 before joining the Middle Fork Eel River (Abel 2021). Activities identified in the proposed action would likely occur in fall 2021 going into 2022.

The Plaskett-Keller Complex Phase 1 Project area can be characterized using seven different cover types, with conifer forest (CON) being most dominant, and water (WAT) occupying least amount of project area (Glebocki 2021).

CALVeg Cover Type.

Cover Type	Code	Acres (scoping)	Proportion of total (%)
Conifer forest/woodland	CON	6251.10	40.28
Hardwood forest/woodland	HDW	3631.07	23.40
Mixed conifer and hardwood forest/woodland	MIX	2735.66	17.63
Herbaceous	HEB	1902.75	12.26
Shrub	SHB	894.26	5.76
Barren [Rock/Soil/Sand/Snow]	BAR	93.20	0.60
Water	WAT	10.01	0.06
		15518.06	100.00

The climate of the project area is defined as Mediterranean with cool, wet winters and hot dry summers. Winter lows are generally above -7C and summer highs can reach 40C. Yearly rainfall averages 60 inches annually.

Wildlife species affected environment:

Within the project action area there are five management areas: Brushy Mountain, Twin Rocks, Grindstone/ Harvey Springs, Butter Milk and Plaskett Meadows.

The Brushy Mountain management area contains suitable habitat for identified northern spotted owl, bald eagle, fisher, marten, wolverine, fringed myotis, pallid bat, western pond turtle and foothill yellow-legged frog. Potential foraging and nesting habitat for bald eagle is present along Cold Creek. Available habitat for spotted owl and northern goshawk dispersal and foraging with minimal nesting and roosting. Spotted owl designated critical habitat is present. FYLF have been detected on the mainstem of Black Butte river. Potential for frogs to utilize reaches of Cold Creek. There are 4 spotted owl territories that occur in this management area within the project action area.

The Twin Rocks management area is suitable for northern spotted owl, bald eagle, northern goshawks, fisher, marten, wolverine, fringed myotis, pallid bat, western pond turtle and peregrine falcon. Peregrine falcon detections have occurred near Telephone Camp, but nest location is not known. Potential nesting and foraging habitat for bald eagle is potentially present along the Black Butte river. Available habitat for spotted owl and northern goshawks includes foraging, dispersal and nesting roosting. FYLF have been detected on the mainstem of Black Butte river with potential of frogs utilizing reaches of Atchison creek, Pinto Creek, Blue slide, White hawk creek and Butte Creek. Western pond turtles have been detected within the project action area along Butte Creek in this management area. here are 7 known spotted owl territories occur in this management area.

The Grindstone/ Harvey management area contains suitable habitat for northern spotted owl, bald eagle, fisher, marten, wolverine, fringed myotis, pallid bat, western pond turtle, foothill yellow-legged frog and peregrine falcon. Potential foraging for bald eagle is present, but no nesting is known since no large bodies of water are present. Available habitat for spotted owl and northern goshawk dispersal and foraging with minimal nesting and roosting. Spotted owl designated critical habitat is present. There are 3 known spotted owl territories that occur in this management area.

The Buttermilk management area is suitable for northern spotted owl, bald eagle, northern goshawks, fisher, marten, wolverine, fringed myotis, pallid bat, western pond turtle and peregrine falcon. Potential foraging for bald eagle is present, but no nesting is known since no large bodies of water are present. Available habitat for spotted owl and northern goshawk dispersal and foraging with minimal nesting and roosting. Spotted owl designated critical habitat is present. There are 5 known spotted owl territories that occur in this management area.

The Plaskett Creek management area contains suitable habitat for identified northern spotted owl, bald eagle, fisher, marten, wolverine, fringed myotis, pallid bat, western pond turtle and foothill yellow-legged frog. Potential foraging for bald eagle is present at Plaskett meadow adjacent to the lakes. Available habitat for spotted owl and northern goshawk dispersal and foraging with minimal nesting and roosting. Spotted owl designated critical habitat is present. There are 4 known spotted owl territories that occur in this management area.

Within the area there 1 threatened species: northern spotted owl (threatened) and its designated critical habitat. Forest Service sensitive species that may occur in the area include northern goshawk, bald eagle, pallid bat, Townsend's big-eared bat, American marten, pacific fisher, North American Wolverine, fringed myotis, foothill yellow-legged frog, and western pond turtle.

Species Account

Presence or absence of the species in the project area is based on the known range of each species, habitat suitability, surveys information, records in the Mendocino National Forest Wildlife Sighting Database, the Forest's Geographic Information System (GIS) vegetation and wildlife species layers and incidental observations.

Threatened, Endangered, Proposed, or Candidate Species (TEPC)

Northern Spotted Owl (NSO) (*Strix occidentalis caurina*)

Area Definitions

Project Boundary Area: The designated boundary of where all of the proposed treatments are to occur.

Action Area: The *Action Area* (AA) is defined for ESA purposes as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR 402). The AA for this BA includes all NSO territories that overlap into the 1.3-mile buffer around the project treatment units. The AA for this project is **29,389** acres.

Northern Spotted Owl Habitat Definitions and Habitat Treatment Definitions, including Habitats within NSO Critical Habitat

Nesting, Roosting, and Foraging (NRF) Habitat for the northern spotted owl consists of habitat used by owls for nesting, roosting, and foraging. Generally, this habitat is multistoried, 80 years old or older (depending on stand type and structural condition), and has sufficient snags and down wood to provide opportunities for nesting, roosting, and foraging. The canopy cover generally exceeds 60 percent, but canopy cover or age alone does not qualify a stand as NRF. Other attributes include a high incidence of large trees with various deformities (e.g. large cavities, broken tops, mistletoe infestations, and other evidence of decadence), large snags, large accumulations of fallen trees and other woody debris on the ground, and sufficient open space below the canopy for owls to fly (Thomas et al., 1990).

NRF habitat that was burned at low severity is still considered to be functional. Low severity fire may have burn or scorch individual or small groups of trees and may result in some loss of the midstory but the multi-layered, complex forest with high canopy cover is still present. As these fire-affected trees die, they will fall and provide coarse woody debris. NRF habitat also functions as dispersal habitat.

NR will not be treated, however some foraging habitat is proposed to be treated by this project.

Post-Fire Foraging (PFF) for the northern spotted owl is NRF that has burned at moderate to high intensity and may include occasional individual or small clumps of green trees but for the most part are completely stand replaced and no longer function as nesting or roosting habitat, nor do they provide enough canopy cover for functional dispersal habitat. However, some studies have shown that spotted owls may continue to utilize this habitat post fire. This is likely incumbent on the patch size of this habitat and its relationships to known owl sites, juxtaposition on the landscape, and other factors. There are differences in the spatial arrangement of spotted owl habitat, locations of activity centers, burn severities and scales of this type of habitat.

Comprehensive analyses of the long-term effects of fire on use and occupancy within a landscape, especially the small scale effects to pairs or individuals, are limited. Recognizing these variations in study area conditions and methodologies, the best available literature indicates that NSOs may to some degree, use burned areas that were previously habitat, for nesting, roosting, and/or foraging, depending on the complex interaction of factors such as habitat quality pre-and post-fire, location of the burns in relation to NSO core use areas, and the size, severity, and patterns of the burn.

For this analysis, the Forest stratified PFF based on factors that influence the likelihood of use by owls. Primary PFF (PFF1) is post-fire foraging within 500 feet of existing NRF having high relative habitat suitability (RHS) which more likely to be used by foraging owls than secondary PFF (PFF2) which is beyond 500 feet from existing high RHS NRF. This accounts for the degree that the PFF contributes to habitat fitness (survival and reproduction) of NSOs at least in the short-term.

PFF2 is characterized as patches of NRF burned at with moderate to high severity and have significant reductions of important habitat components (i.e. lack of stand structure, diversity, cover, or heterogeneity), are not adjacent to stands of suitable habitat, and are associated with abiotic factors such as aspect or slope position that may favor a high severity fire regime (Skinner 2002). PFF1 is characterized as patches of NRF that burned at moderate to high severity, but are interspersed in a mosaic of mixed severity and unburned habitat (within 500 feet of existing NRF), are located in portions of the landscape associated with use, and could still be utilized by NSOs.

There is much debate currently on the value of PFF to spotted owls, and the effects of salvage in burned habitat on owls. For a summary of research into the use of PFF by owls, and owl habitats see Bond et al. 2009, Clark 2007, Clark et al. 2011, Clark et al. 2013, Elliott 1985, Gaines et al. 1995, Jenness et al. 2004, King et al. 1998, Lee and Bond 2015a, Lee and Bond 2015b, Roberts et al. 2011, Jones and Peery 2018, Ganey et al. 2017, and Hanson et al. 2018.

Dispersal Habitat is a subcategory of “all dispersal” habitat for northern spotted owls. All- dispersal is defined as dispersal plus NRF. Throughout this document, “dispersal” will be used to describe dispersal-only habitat. Thomas et al., 1990, defined dispersal habitat as forested habitat more than 40 years old, with canopy closure more than 40 percent, average diameter greater than 11 inches, and flying space for owls in the understory and does not provide the components found in NRF. It provides temporary shelter for owls moving through the area between NRF habitats and some opportunity for owls to find prey; but it does not provide all of the requirements to support an owl throughout its life. Dispersal will be used throughout this document to refer to habitat that does not meet the criteria to be NRF habitat (i.e., lacks high canopy cover, large tree component, structural complexity, decadence, etc. but has adequate cover to facilitate movement between blocks of NRF habitat). Dispersal habitat will not be treated by this project.

Unsuitable habitat - does not provide habitat for northern spotted owls and would not develop into NRF or dispersal in the future.

Activity Center (AC) – the center of owl activity based on detections during surveys or incidental sightings. This point is based on the most recent nest site, pair sighting, or highest concentration of activity of single birds, respectively.

Home Range – an area of habitat within a 1.3-mile radius from an owl AC.

Core Area – an area within a 0.8-km (0.5-mile) circle (approximately 500 acres) around an AC.

Outer Ring – the remaining acres of the home range outside the Core Area (between the 0.5 and 1.3-mile radius from an AC).

100 Acre LSR – an area of 100 acres of the most suitable habitat designated for each AC on lands outside the LSR RC network.

Nest Grove – the best 100 contiguous acres of suitable habitat around a valid owl activity center.

Downgrade – treatments will reduce habitat elements to the degree that the habitat will not function in the capacity that exists pre-treatment, but activities will not remove habitat entirely (i.e., downgrade from nesting/roosting to foraging habitat). To ‘Downgrade to Dispersal’ means that previously suitable NR or F habitat has had enough of the canopy cover and stand structure removed or altered through treatment as to lose function as NR or F and would not be suitable for long-term occupation, but it would retain just enough cover and structure to function as dispersal habitat.

Maintain/Beneficial – changes in the habitat may be neutral or beneficial to habitat function even though habitat elements may be modified.

Remove – treatments will reduce habitat elements to the degree that habitat will no longer function as suitable (NRF) for NSO.

NSO Habitat

Nesting/ Roosting

Suitable NSO nesting/roosting (N/R) habitat, as defined by the Forest Service, is comprised of mature timbered stands having multi-layered conditions, an average canopy closure of 60 percent or greater (both conifers and hardwoods, but with at least 40% conifer cover) and obvious decadence. The overstory should be comprised of conifer trees 21 inches or greater diameter at breast height (dbh).

Nests are usually in snag cavities or broken tops of large trees in mature/old-growth forest. Daytime roost sites in northern California are in dense, multi-layered canopy forests, and average 550 feet from water.

Foraging

NSO forage in forested habitats with hunting perches and a stand structure that allows for flight in the understory and access to prey. NSO will also forage in N/R habitat; however, foraging-only habitats include younger seral stages (early mature stands 70 years and older, at least 11” dbh and at least 40% canopy closure).

The average home range of the northern spotted owl is 3,398 acres in this portion of its range, which equates into a circle with a 1.3 mile radius from the center of the territory or “activity center” (AC). Research indicates that the most activity within a territory occurs within 0.7 miles of the nest tree. Northern spotted owl territories with at least 400 acres of suitable nesting/roosting/foraging habitat (250 acres N/R and 150 acres F) within 0.7 miles and 1,340 acres within 1.3 miles (550 acres NR and 785 acres F) of the nest tree are generally thought to have a higher chance of occupation.

NSO Prey

Northern spotted owls feed mainly on small forest mammals, particularly arboreal and semi-arboreal species (USDI 2011, Courtney et al. 2004). Northern flying squirrels and woodrats comprise the bulk of their diet but secondary species such as mice (*Peromyscus* sp.) may also be important for survival and reproduction. In portions of the NSO range, deer mice, red-backed voles, and two species of lagomorphs are considered locally and/or seasonally important in their diet (Courtney et al. 2004). Within the Mendocino National Forest, it is expected that mice, woodrats, and flying squirrels are the most likely prey item based on available habitat.

Habitat that supports prey for NSO is an important component for the survival of owls and their offspring. High quality woodrat habitat includes the shrubby vegetation that is essential for providing cover and food in forest habitat. In addition to brushy vegetation, components associated with NSO habitat such as downed logs, hardwoods and other woody material appear to be important components of woodrat habitat (Sakai and Noon 1993). Snags are also an important habitat component for flying squirrels.

NSO Critical Habitat

Critical habitat for the NSO was originally designated in 1992 (57 FR 10:1796-1837). Critical habitat was revised in 2008 (73 Federal Register 157:47326) and became effective on September 12, 2008. The 2008 USFWS's critical habitat (CH) delineation was challenged in court and the 2008 designation of northern spotted owl CH was remanded and the USFWS was ordered to revise the CHU designation. On February 28, 2012, the Service released the proposed critical habitat in the form of maps and the draft form of the federal register publication. The final rule was published in the Federal Register on December 4, 2012 and became effective January 3, 2013 (77 Federal Register 233:71876-72068).

Section 4(a)(3) of the Act specifies that the Service shall designate critical habitat for endangered or threatened species and may, from time-to-time thereafter as appropriate, revise such designation. Critical habitat is defined as (1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features that are essential to the conservation of the listed species and which may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by the species at the time it is listed that are essential for the conservation of a listed species. Past regulations emphasize "primary constituent elements," or PCEs, in identifying these physical or biological features. Recent revisions to the regulations rely on the physical or biological features (PBFs) essential to the conservation of the northern spotted owl are forested lands that are used or likely to be used for nesting, roosting, foraging, or dispersing; that are from this time forward are to be used.

Physical and Biological Features (PBFs) of 2012 Critical Habitat

Based on current research on the life history, biology, and ecology of the northern spotted owl and the requirements of the habitat to sustain its essential life history functions, as described above, the Service has identified the following PBFs for the northern spotted owl are:

- 1) Forest types that may be in early-, mid-, or late-seral states and support the northern spotted owl across its geographical range**
- 2) Habitat that provides for nesting and roosting.** This habitat must provide:
 - a) Sufficient foraging habitat to meet the home range needs of territorial pairs of northern spotted owls throughout the year.
 - b) Stands for nesting and roosting that are generally characterized by:
 - (i) Moderate to high canopy closure (60 to over 80 percent),
 - (ii) Multilayered, multispecies canopies with large (20- 30 in (51-76 cm) or greater diameter at breast height (dbh) overstory trees,
 - (iii) High basal area (greater than 240 ft²/acre (55 m²/ha)),
 - (iv) High diversity of different diameters of trees,
 - (v) High incidence of large live trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and other evidence of decadence)
 - (vi) Large snags and large accumulations of fallen trees and other woody debris on the ground, and
 - (vii) Sufficient open space below the canopy for northern spotted owls to fly.
- 3) Habitat that provides for foraging.** Foraging habitat varies widely across the northern spotted owl's range, in accordance with ecological conditions and disturbance regimes that influence vegetation structure and prey species distributions.
- 4) Habitat to support the transience and colonization phases of dispersal,** which in all cases would optimally be composed of nesting, roosting, or foraging habitat (PBFs (2) or (3)), but which may also be composed of other forest types that occur between larger blocks of nesting, roosting, and foraging habitat. In cases where nesting, roosting, or foraging habitats are insufficient to provide for dispersing or nonbreeding owls, the specific dispersal habitat PBFs for the northern spotted owl may be provided by the following:
 - a) Habitat supporting the transience phase of dispersal, which includes:
 - (i) Stands with adequate tree size and canopy closure to provide protection

from avian predators and minimal foraging opportunities; in general this may include, but is not limited to, trees with at least 11 in (28 cm) dbh and a minimum 40 percent canopy closure; and

- (ii) Younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, if such stands contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the transience phase.
- b) Habitat supporting the colonization phase of dispersal, which is generally equivalent to nesting, roosting, and foraging habitat as described in PBFs (2) and (3), but may be smaller in area than that needed to support nesting pairs.

Basic Biology

The owl population is made up of the following types of birds: 1) territorial adults (pairs or single birds that defend a territory); 2) eggs and owlets (stages of reproduction which are dependent on parental care); 3) individual juvenile birds that have left their natal territory and are dispersing; or 4) individual floaters (non-territorial sub-adults and adults that establish successive temporary home ranges until they find a partner or die.).

Territorial pairs are the best measure of population size because they represent a reproductive unit. Paired adults have the lowest mortality rates of all the different classes of birds. During nesting season, territorial pairs are only found in relatively large patches of habitat with late successional forest characteristics, and therefore, the number of pairs in the population and birth rates are dependent on the quantity and quality of these patches. They tend to move out of the core nesting area to over-winter (usually down-slope and not very far) and therefore have a home range as well as a territory. Pairs may split up, with the females leaving the territory/home range more frequently than males.

Single territorial birds occupy habitat similar to that of the pairs, although in some cases the patch size may be smaller or the habitat of lower quality. They are often thought to represent potential for population increase, since they might easily be joined by another adult if their territory includes good habitat. However, declining populations may also have high numbers of territorial single birds.

Floaters and dispersing juveniles are dependent on unoccupied habitat, including small patches with late successional characteristics for protection from predators and adverse weather while they wander in search of an opportunity to mate. Floaters supply a stabilizing influence on the population by being readily available to join a territorial single bird or replace any member of a pair that dies.

Recent landscape-level analyses suggest that a mosaic of late-successional habitat interspersed with other vegetation types may benefit spotted owls more than large, homogeneous expanses of older forests (Zabel et al. 2003, Franklin et al. 2000, Meyer et al. 1998, USDI 2008a).

Status and the Environmental Baseline

Northern spotted owl was federally listed as Threatened because of an adverse modification or loss of habitat (USDI 1990). At that time, timber harvesting was considered the primary cause of habitat loss; but it was recognized that the losses were exacerbated by catastrophic events such as fire, volcanic eruption, and windstorms. Detailed accounts on status, distribution, and abundance are found in the recently published Scientific Evaluation of the Status of the Northern Spotted Owl (Courtney et al. 2004). Additional reference information can also be found in the Interagency Scientific Committee report on conservation of the northern spotted owl (ICS 1990).

Over the range of the bird, demographic studies indicate declining populations during the years 1985 to 2003 (Anthony et al. 2004). The analysis suggests that the range-wide northern spotted owl population declined at about 3.7 percent per year. The rate of population decline for the eight monitoring areas under the Effectiveness Monitoring Plan was 2.4 percent per year. Oregon declined by 2.8 percent per year, California by 2.2 percent per year and unexpectedly Washington declined by 7.3 percent per year. The most recent assessment indicates that the northern California owl population is stable (Franklin et al. 2008).

Most, but not all, of the Mendocino National Forest was surveyed between 1974 and 2020. The areas that later became the Late Successional Reserves were systematically surveyed between 1989 and 1991. Most other surveys were conducted as the result of planning site specific projects such as timber sales, prescribed fires, etc. Based on these surveys, biologists designated an activity center for each pair and resident single bird, for a total of 226 activity centers within the Forest.

NSO Habitat Description in the Action Area

Suitable spotted owl habitat was estimated by using the GIS vegetation cover layer, NSO post fire layer for the Mendocino NF. Forested vegetation required by northern spotted owls can be classified into nesting/roosting habitat, foraging habitat, and dispersal habitat. Conceptually, these habitats form a continuum.

Nesting/roosting habitat has the strictest vegetation requirements, and is restricted to late successional or mature patches within the forest. This is the habitat most likely to support a pair and may be occupied by single territorial birds for long periods. Recent landscape-level analyses suggest that a mosaic of late-successional habitat interspersed with other vegetation types may benefit spotted owls more than large, homogeneous expanses of older forests (Zabel et al. 2003, Franklin et al. 2000, Meyer et al. 1998).

1. Nesting/Roosting Habitat

Suitable nesting and roosting habitat (henceforth referred to as “nesting”) includes mature timbered stands having multi-layered conditions, total canopy closure of 60% or greater, and obvious decadence (large, live coniferous trees with deformities such as cavities, broken tops, and dwarf-mistletoe infections) (Thomas et al. 1990). Usually the over-story is at least 40% of the total canopy closure and is comprised of trees 21 inches or greater dbh (ibid.). Canopy closure includes mid and upper story levels of vegetation consisting of both conifer and hardwood. Under-story characteristics demonstrate multi-layered, uneven-aged conifer and hardwoods ranging in age from 20-70 years (Thomas et al. 1990). Dead and down attributes include snags >21 inches dbh and presence of large down logs (Thomas et al. 1990, USDI 1992a). Foraging also occurs within nesting/roosting habitat.

The strata labels in the GIS vegetation coverage that best represent this habitat on the Mendocino National Forest are M3G, M4G, and M6G (see Appendix A) (Zabel et. al. 2003). Over-story canopy closure reported in this coverage is based on the conifers and does not include hardwoods. Actual total canopy closure is at least 20% more closed than is indicated by the strata labels. Stand exams conducted within the proposed units collected current canopy closures and were averaged across the stand.

2. Foraging Habitat

Suitable foraging habitat is intermediate in vegetation requirements, and includes a wider array of forest types, including more open and heterogenic habitat. Foraging habitat alone may shelter roosting birds or territorial singles but is unlikely to support a reproductive pair.

Descriptions of foraging habitat range from stands with complex structure (Solis and Gutiérrez 1990) to forests with lower canopy closure and smaller trees than forests containing nests or roosts (Gutiérrez 1996). High quality foraging requires hunting perches and a stand structure that allows for flight in the under-story and access to prey on the ground. Typically foraging habitat has average canopy closure of 40% or greater.

The strata labels in the GIS coverage that represent foraging habitat on the Mendocino National Forest are M4P, R4X, and D4X (Zabel et. al. 2003). The D4X stands represent D4P & D4G (see Appendix A). Again, over-story canopy closure in this coverage is based on the conifers and does not include hardwoods. Actual canopy closure is at least 20% more closed than is indicated by the strata labels. Hence the M4P class was included in the model of foraging habitat. Stand exams conducted within the proposed units collected current canopy closures and were averaged across the stand. In northern California, suitable owl foraging habitat has been defined as stands with average tree diameter of at least 11 inches and average canopy closure of 40% or greater (Zabel et. al. 2003).

3. Dispersal Habitat

Northern spotted owls are known to disperse through all kinds of forested areas including over and around roads, clear-cuts, old burns, and non-forested areas (Forsman et al. 2002). In a radio tracking study done by Miller et al. (1997), dispersing juveniles were observed using a wide variety of conifer habitat ranging from harvested areas to open sapling stands to mature and old-growth stands.

Primary Threats to Viability

Loss of Habitat

The most recent review of spotted owl research found that the major threats to northern spotted owls include the effects of past and current harvest; loss of habitat to fire and increasing tree densities; and the invasion of barred owls (Courtney et al. 2004).

Within the range of the owl, timber harvest has decreased greatly since the time of listing. Lag effects or synergistic relationships related to past habitat loss may still be affecting the owl's demographic performance. Wildfire is currently the major cause of habitat loss on federal lands (Courtney et al. 2004) and the continued accumulation of surface fuels and ladder fuels is a concern. The effects of timber harvests or wildfire can range from inconsequential to severe habitat degradation of what is left after the harvest or fire. Of the two, wildfire is uncontrollable and can not only remove much larger tracts of suitable habitat and other timbered land, but also all of the hardwoods and other vegetation that would remain after a controlled harvest. Fire that escapes initial attack usually occurs during extreme conditions and can be devastating in areas with moderate to high fuel loading.

At the range-wide scale, spotted owl natal and breeding dispersal is likely impacted by forest fragmentation. As defined by Franklin, et al. (2002a & b), fragmentation is "the set of mechanisms leading to the discontinuity in the spatial distribution of resources and conditions present in an area at a given scale that affects occupancy, reproduction, and survival in a particular species." The key point is whether the area in question affects the continuity of habitat with respect to the species. In determining whether a project would cause fragmentation or not, habitat configuration, the scale of change, the pattern of change, and the mechanism of change should all be considered. Of threats identified at the time of listing, only one (predation linked to fragmentation) does not now appear well supported (Courtney et al. 2004). The median natal dispersal distance is approximately 10 miles for males and 15.5 miles for females (Forsman et al. 2002). There is little evidence that smaller openings in forested habitat influence the dispersal of spotted owls, but large, non-forested valleys such as the Willamette, Rogue and Umpqua Valleys, or large bodies of water apparently are barriers to both natal and breeding dispersal (Forsman et al. 2002). These valleys are approximately 20 miles wide. At smaller scales, dispersing juveniles have been observed using a wide variety of conifer, conifer hardwood, and mature

hardwood habitats ranging from harvested areas to open sapling stands to mature and old-growth stands.

Barred owls

Barred owls occupy a broad range of forest conditions, from younger seral stages and highly fragmented forests in managed landscapes to pristine forests in wilderness areas (Hamer, 1988) (Herter & Hicks, 2000) (Kelly, Forsman, & Anthony, 2003). Barred owls use a wider range of forest types than NSO (Kelly, Forsman, & Anthony, 2003) (Hamer, Forsman, & Glenn, 2007). Consequently, the loss of late-successional old-growth forest and fragmentation of these forests and the movement of barred owls into them, has decreased the amount of suitable habitat for NSO.

Within the range of the spotted owl, barred owls (*Strix varia*) are an invasive species that are likely to be a major threat; and the effect of barred owls appears to vary geographically, with greater effects in the northern part of the owl's range. Since 1990, the barred owl has expanded its range such that it is now roughly coincident with the range of spotted owls (Courtney et al. 2004). Barred owls apparently compete with spotted owls through a variety of mechanisms: prey overlap (Hamer et al. 2001); habitat overlap (Dunbar et al. 1991; Herter and Hicks 2000; Pearson and Livezey 2003); and agonistic encounters (Leskiw and Gutiérrez 1998; Pearson and Livezey 2003). Recent research and observations also indicate that barred owls may displace spotted owls (Kelly et al. 2003) and Anthony et al. (2006) reported that barred owls had a negative effect on spotted owl survival in three demographic study areas in Washington. Although the barred owl currently constitutes a significantly greater threat to spotted owls than originally thought at the time of listing, it is unclear whether forest management has an effect on the outcome of interactions between barred and spotted owls (Courtney et al. 2004, Gutiérrez et al. 2007). In recent literature by Livezey (2009), it was presented that forest harvesting is not a likely candidate for the cause of barred owl range expansion.

Barred owls are recognized as a significant threat to the recovery of the NSO (USDI & USFWS, 2011a). The barred owl recovery actions included in the Recovery Plan were developed under the assumption that barred owls now occur at some level in all areas used now or in the past by NSO. The RP addresses the threat to the NSO from the barred owl through the preservation of existing high-quality habitat and preservation of high priority NSO territories. The Recovery Plan (RP) also addresses the need to restore additional habitat for the owl in order to ameliorate the impact of the barred owl.

According to the RP which was informed by (Forsman, et al., 2011) and (Dugger, Anthony, & Andrews, 2011), the decline of the NSO was greater than anticipated in the NWFP. This decline was reflected in the NSO's population decline and low occupancy rates in large habitat reserves and from barred owl invasions into spotted owl habitats (Forsman, et al., 2011) (Dugger, Anthony, & Andrews, 2011). To mitigate the impacts of barred owls and slow or reverse the NSO decline, the RP recommended restoration of spotted owl sites and high-value spotted owl habitat.

Recovery Action 32 states: “Maintaining or restoring forests with high-quality habitat will provide additional support for reducing key threats faced by spotted owls” and “Protecting these forests should provide spotted owls high-quality refugia habitat from the negative competitive interactions with barred owls that are likely occurring where the two species’ home ranges overlap. Maintaining or restoring these forests should allow time to determine both the competitive effects of barred owls on spotted owls and the effectiveness of barred owl removal measures.”

Recovery Action 10 requires that agencies “Conserve spotted owl sites and high value spotted owl habitat to provide additional demographic support to the spotted owl population”. Maintaining all historic ACs is a standard MNF protection measure. The MNF database includes a total of 226 NSO ACs that meet the USFWS survey protocol (Protocol) requirements. Many of these predate the 1990 listing of the NSO. All historic ACs from this list of 226, currently occupied or not, will be considered during project evaluations; however, ACs which are determined to be extinct (invalid) because of habitat loss from the Ranch and August Complex Fires may be removed from that list.

“Maintaining or restoring these forests should allow time to determine both the competitive effects of barred owls on spotted owls and the effectiveness of barred owl removal measures” (II-67 of the 2011 Recovery Plan). Protecting these forests should provide spotted owls high-quality refugia habitat from the negative interactions with barred owls that are likely occurring where the two species’ home ranges overlap. The proposed Project will not exacerbate competitive interactions between the two species.

Two critical elements related to the efficacy of NSO surveys and nest/roost site fidelity must be considered. As noted above, barred owls have caused a dramatic decline in NSO numbers. When barred owls are present, NSO are often more difficult to locate because they are less likely to respond. In addition, it has been shown that NSO nest core site fidelity has decreased since the arrival of the barred owl. As a consequence, it is not always appropriate to assume that a NSO AC core area has not changed since it was previously identified based on an NSO roost or nest location.

Barred owls have been located on the Forest in the vicinity of Board Creek (in action area), Barr Creek (over four miles from the project area), Jumpoff Creek (over two miles from the project area), and near Steel Bench (over eight miles from the project area). They were first detected on the Forest in 1991 and 1992 at Jumpoff Creek. One additional sighting was reported over 35 miles south of the project. So far, four separate spotted owl detections have been documented within the Action area, one of which was a pair (3048). In 2020, a barred owl was located near Pinto Ridge, within the home range for spotted owl GLE0023 and in 2011 two barred owls were located at Pine Mountain and two were located in the Lakeview/Pillsbury area.

The proposed salvage and noncommercial treatments would not remove or downgrade any remaining late successional reserves or nest groves which represent the highest quality of nesting/roost habitat within and outside of activity centers.

Management for Recovery

The Final Recovery Plan Managed Owl Conservation Areas (MOCA's) are generally synonymous with the current LSR configuration established under the Northwest Forest Plan. MOCA's are based on "the principles of conservation biology and are meant to provide the spotted owl with the habitat required to develop and maintain a stable or increasing, well-distributed populations". Land use allocations such as visual corridors, riparian reserves, unstable soil areas, and other species management areas that support spotted owl habitat, within a landscape of forest lands managed for timber production should facilitate dispersal for spotted owls (USDI 2008a). These MOCA's were derived from multiple analyses including the Interagency Scientific Committee report (ICS 1990), the Northern Spotted Owl Draft Recovery Plan (USDI 1992a), the Northwest Forest Plan (USDA and USDI 1994a & b), and spotted owl population modeling in the 1990's and revised in 2008 (USDI 2008). In the modeling analysis completed for the Recovery Plan, it was determined that with the MOCA system, spotted owl populations would likely stabilize and persist, while allowing for dispersal, where MOCA's were large enough to support 20 or more pairs. The MOCA's capable of supporting up to 19 pairs are also considered important for genetic diversity, recruitment, and dispersal in support of the larger MOCA's. This concept of sufficiently large habitat blocks in a closely associated habitat network was originally proposed in the FEMAT report (USDA et al. 1993) for ALL late successional species. The 2004 Scientific Evaluation of the Status of the Northern Spotted Owl (Courtney et al. 2004) acknowledged this conservation strategy of reserves was based on sound scientific principles which have not substantially changed since the spotted owl was listed. The design was adopted by the spotted owl recovery team for the Recovery Plan.

This approach, initially published by Thomas et al. (1990), the Spotted Owl Recovery Team (USDI 1992a), and most recently the Final Spotted Owl Recovery Plan (USDI 2008), was to manage for a network of "Habitat Conservation Areas (HCAs)" (now LSRs/MOCAs), each of which was large enough to support 20 or more pairs of owls with smaller HCAs interspersed where the goal of 20 pairs was not achievable. To ensure that owls could disperse among the HCAs, Thomas et al. (1990) recommended that distances between them should not exceed 12 miles. Those HCAs capable of supporting at least 20 pairs of spotted owls were to be no more than 12 miles apart, and those capable of supporting fewer than 20 pairs were to be no more than 7 miles apart. This approach (metapopulations) has received considerable support from conservation biologists and ecologists as a viable alternative to a preservationist approach ("save it all") to northern spotted owl management (USDA et al. 1993).

The U.S. Fish and Wildlife Service (USFWS) has designated critical habitat for northern spotted owls and the Northwest Forest Plan designated Late Successional Reserves for a similar purpose (57 FR 1796, USDI 1992b, USDA and USDI 1994a & b, USDI 2008). Both strategies are based to theories of island biogeography, meta-population dynamics, and refuge design. The primary concept relating these theories is that stable population(s) can be achieved by designing a system of sufficiently protected large “reserves” interconnected by areas over which owls can move relatively freely (dispersal habitat) (ISC 1990).

Courtney et al. (2004) concluded that conservation strategies for the northern spotted owl are based on sound scientific principles and findings, which have not substantially altered since the time of listing (USDI 1990), adoption of the Northwest Forest Plan (USDA and USDI 1994b), and the Final Recovery Plan (USDI 2008).

Under the Northwest Forest Plan (USDA and USDI 1994a), viability of the northern spotted owl was assessed. It was determined that under Option 9, there is 80% or greater likelihood suitable habitat would be of sufficient quality, distribution, and abundance to allow populations to stabilize and be well distributed across federal lands (USDA et al. 1993).

NSO surveys and NSO Occurrences

The purpose of this section is to disclose the best available information of observations of this species within the Action area. Between 1974 and 2021, various portions of the action area were surveyed for spotted owls. Call stations were established for the 2021 season based on the current post-fire suitable habitat for NSO in the action area. Most recent surveys from 2017 to 2020 covered the Smokey Fuels Treatment project area that overlaps with the Plaskett-Keller Phase 1 Complex was surveyed by Tanner Consulting. The analysis of potential effects of the Plaskett-Keller Phase 1 Complex Project is dependent on the assumption that owls are still present in the suitable nesting habitat remaining. The Smokey fuels surveys are described in the section below.

There have been a total of 156 known detections of NSO in the project action area from 1974 up to 2021. The most recent surveys have been completed in 2021 with 6 complete visits along call stations in the action area. Surveys were completed from May 6th to July 14th by the Grindstone and Upper Lake wildlife biologists and other resource staff to determine if owls have moved out of the project action area to more prevalent habitat within the forest. According to the 2012 protocol, surveys typically begin from March 15 to April 14.(NSO protocol 2012) However, due to snowpack creating unavoidable operational condition, call routes were not accessible prior to May, and this was discussed with Fish and Wildlife Service (FWS). Approval was attained and it was determined surveys do meet the protocol standards. Three surveys were completed before June 30. The second year of surveys will be completed by in spring/ summer of 2022 pending on snow-pack and project access. If surveys are not able to begin in March or April due to access and snow-pack, the USFWS will be alerted.

Listed are the tables with NSO detections from surveys in each of the Activity centers where proposed treatments are to occur. Data was attained from the state CNDDDB and Forest Service NRIS database from the FS.

Table 7. NSO Detections in AC GLE0001

Survey years	Detections	NSO detections	Reproduction detected
1974	7	Unknown Singles, Male and pairs	No
1982	3	Female, Pair	No
1983	1	Unknown Single	No
1986	2	Pair	No
1990	4	Female, Male, Pair	Yes – 1 young
1992	5	Unknown singles, Male Pair	No
1994	2	Pair	Yes – 2 young
1995	2	Pair	No
1996	1	Male	No
1997	2	Pair	No
1998	2	Pair	Yes
2018	3	Unknown Single, Pair	No
2020	0	None	No
2021	1	Male	No

Table 8. NSO Detections in AC GLE0002

Survey years	Detections	NSO detections	Reproduction detected
1980	3	Unknown single, Pair	Yes – 2 young
1982	1	Unknown single	No
1989	7	Singles and pairs	No
1990	3	Male, unknown single and pair	Yes – 1 young
1992	3	Male, Pair	Yes – 2 young
2006	2	Pair	No
2008	3	Pair	Yes – 1 young
2018	3	Male, Pair	No

2021	1	Male	No
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Table 9. NSO Detections in AC GLE0003

Survey years	Detections	NSO detections	Reproduction detected
1987	2	Pair	No
1988	5	Unknown single, Male, Pairs	Yes – 2 young
1989	3	Male	No
1990	2	Male	No
1991	2	Unconfirmed Pair	No
1992	3	Male, Female, unknown single	No
2011	1	Unknown Single	No
2017	1	Male	No
2018	4	Male, unknown Singles	No
2020	1	Male	No
2021	0	None	No

Table 10. NSO Detections in AC GLE0004

Survey years	Detections	NSO detections	Reproduction detected
1982	2	Pair	No
1991	2	Male, Female	No
1992	1	Male	No
2011	5	Females and Pairs	No
2014	3	Single (moused male), Pair	Yes
2015	1	Single (moused male)	No
2017	2	Male, Female	No
2019	4	Female, Male	No
2020	2	Males	No
2021	0	None	No

Table 11. NSO Detections in AC GLE0011

Survey years	Detections	NSO detections	Reproduction detected
1982	2	Pair	No
1990	3	Male, Pair	No
1998	3	Males, Females	No
2018	4	Male, Female	No
2020	2	Male (moused), Female	No
2021	0	None	No

Table 12. NSO Detections in AC GLE0025

Survey years	Detections	NSO detections	Reproduction detected
1992	2	Males	No
2021	0	None	No

Table 13. NSO Detections in AC GLE0023

Survey years	Detections	NSO detections	Reproduction detected
1991	4	Male	No
2011	1	Single unknown	No
2015	2	Males	No
2017	1	Male	No
2018	1	Female	No
2020	0	None	No
2021	0	None	No

Table 14. NSO Detections in AC MEN0019

Survey years	Detections	NSO detections	Reproduction detected
1975	4	Female, Pair	Yes – 3 young
1976	3	Female, Pair	No

1990	3	Pair, Unknown Single	No
2006	2	Pair	Yes – 2 Young
2008	2	Male	No
2021	0	None	No

Table 15. NSO Detections in AC GLE0035

Survey years	Detections	NSO detections	Reproduction detected
2015	2	Pair	No
2017	2	Pair	No
2019	3	Male	No
2020	3	Male, Pair	No
2021	0	None	No

The 2021 surveys in the project covered remaining suitable habitat (over 64% has been burned) with call stations covering areas in each of these nine ACs. There were 2 individuals owls detected in the action area from 2021 surveys. Both of these were males with one of them visually detected in the home range of GLE0002. No pairs or nests were detected in the entire action area for 2021.

In general, due to the extent and severity of the fire it is unlikely that these NSO will be nesting within ¼ miles of the salvage units; however, with individuals present; nesting cannot be ruled out without another year of surveys and activity center searches. The Forest will conduct 6 site visit surveys in 2022 to complete the 2 year survey protocol and ensure nesting is not occurring in the action area. The salvage portion of this project is expected to be completed by the end of 2022. Fuels reductions would occur over the next several years and could potentially last 10-15 years. The forest will complete the 2 year NSO protocol and will continue to complete spot checks for the duration of all treatments. The 2012 protocol level surveys will be conducted throughout the life of the project.

If the 2 year surveys are not completed, an LOP from February 1 through July 31 will be imposed. The proposed treatments will occur in moderate to high severity areas; therefore, surveys will only be needed to prevent disturbance. If owls are found to be nesting within ¼ mile of any unit, no noise- or smoke-generating activities will occur between February 1 and July 31.

Table 16. Barred owl detections in Activity Centers with project treatments

Detections Date range	Activity Center	Detections	Barred Owl detections	Reproduction detected
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2020	GLE0023	2	Single males	No
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Activity Center GLE0023 was surveyed as far back as 1991 and most recent as 2021. A single NSO was detected in 1991, but no nest or reproduction was detected. No NSO detections occurred in 2021. In 2020, Tanner consulting detected 2 male barred owls in GLE0023. These barred owls were not detected in 2021. However, with known recent barred owls present, the likelihood of NSO present in this AC is unlikely as they would be outcompeted. Future surveys in this AC is expected to be conducted to determine a lack presence or absence of NSO and barred owls.

NSO surveys and occurrences in adjacent projects that overlap

The Plaskett-Keller Complex Phase 1 project is located directly adjacent to previous Smokey and Hardin timber sales projects. NSO protocol level surveys have been conducted for Smokey and Hardin from 2010 to 2020. Surveys were contracted out and conducted by the Tanner consulting firm for the last five field seasons.

Table 17. Summary of NSO Detections in the Smokey and Hardin Fuels Projects that overlap with the Plaskett-Keller Complex Phase 1 Footprint. Refer to tables 7 to 15 for details for each AC.

Survey Years	Activity Center	Detections	NSO detections	Reproduction detected
1974-2021	GLE0001	35	Singles and pairs	Yes (1990 and 1994))
1984-2021	GLE0003	26	Singles and pairs	Yes (1980, 1990, 1992 and 2008)
1991-2021	GLE0004	22	Singles	Yes(2014)
1980-2021	GLE0011	14	Singles and Pair	No
1991-2021	GLE0023	9	Singles	No
1989-2020	GLE0035	10	Singles and pairs	No

The most recent surveys from 2020 detected a roosting pair in AC GLE0035, a single male in GLE0004, a single female in GLE0011 and a single male in GLE0003.

Two male barred owls were detected in AC GLE0023. Not surprisingly, no NSO were detected in GLE0023 with the presence of barred owls.

NSO use of Burned Forests

Fire may influence spotted owl foraging habitat selection by altering prey availability. Northern spotted owls select habitat based on prey availability and forage in forest edges where prey

availability is high (Zabel et al. 1995, Ward Jr. et al. 1998). Sakai and Noon (1997) observed northern spotted owls foraging at edges where they detected woodrats. Roberts et al (2015) found that fire severity was the most influential habitat variable for small mammal assemblages in frequent-fire forests. Different fire severity patterns create a variety of different habitat types that may promote owl prey diversity and abundance (Roberts et al. 2015). A landscape mosaic of variable burn severities, including unburned patches, can ensure that individual owls have access to different seral stages (Hanson and Odion, 2016), thereby potentially increasing their access to different prey species within their home range.

NSOs exhibit site fidelity and are central-place foragers, and may continue to use the post-fire landscape depending on the remaining post-fire habitat conditions (suitable habitat) in the area (Clark 2007, Clark et al. 2011, Clark et al. 2013, Gaines et al. 1995, King et al. 1998). High-severity burns were generally not used by spotted owls for nesting/roosting (Bond et al. 2009, Clark 2007, Clark et al. 2011, Clark et al. 2013, King et al. 1998) due to live canopy loss. However, northern and California spotted owls have been known to use burned areas for foraging (Bond et al., 2009; Comfort, 2013; Eyes, 2014; Lee et al, 2012; Lee et al, 2013; Lee and Bond, 2015, Hanson and Odion, 2016), although the extent of use is unknown (Manley 2014). The results of these studies have been variable. Bond et al. (2009) suggests that California spotted owls preferentially used high-severity burned for foraging compared to unburned or low-severity areas, and that salvage logging within 1.5 km (0.9 mi) of an AC may result in abandonment of the site. However, Comfort (2013) found that northern spotted owls and Eyes (2014), found that California spotted owls avoided high-severity patches and used lower-severity patches for foraging. Eyes (2014) had a similar study to Bond (2009) but with twice the sample size and greater timeframe (3 years versus 1 year).

Wildfire can reduce the amount of NSO habitat and consequently created more edge between suitable and non-suitable habitat. For NSO, breeding season home range size may increase with an increase in habitat edge thus suggesting that owls need to travel farther to acquire prey in areas with higher levels of habitat fragmentation (Schilling et al. 2013). Although edges can provide more prey and diversity of prey from NSO, the owls foraging at the edge have less cover and possibly experience a higher risk of predation (Schilling et al. 2013)

Research from Eyes (2014) suggest that similar species, California spotted owls selected foraging areas with lower fire severities, high contrast edge (abrupt change in vegetation such as edge of high-severity areas), and located near the roost site (within average 1310 meters or 0.8 mi) within their home range. The results from Eyes (2014) did not indicate that owls used the interior of high-severity patches. The loss of canopy cover in high-severity patches increases exposure to inclement weather and potential predation, and owls may select low-severity sites to avoid predators (Eyes 2014). Eyes (2017) found no statistical difference between the use of high contrast edges and low contrast edges. Eyes (2017) found that Northern Spotted Owls had a stronger habitat selection within their home ranges near the roost location and edge habitats. Research examining how different edge types affect owl foraging habitat quality is limited, but Comfort (2013 and 2016)

also found that northern spotted owls avoided high contrast edges. Clark (2007) found in that northern spotted owl demonstrated a strong selection for NRF habitat with a low/unburned fire severity and used this habitat in greater proportion than its availability.

The studies and research on the use of fire landscapes by the Northern Spotted Owl is highly variable and studies often contradict each other. Studies such as Eyes (2014 and 2017) demonstrate the use of these edge habitats for foraging, however Comfort (2013 and 2016) demonstrate that spotted owls avoided these high contrast edges. The concept for the potential for NSO to use fire caused edge effect foraging opportunities around low severity fire and nest/roost locations was considered for this project. This foraging habitat was delineated in order to capture the potential for continued use by NSO of previously suitable NRF that burned at moderate to high severity. Some studies have shown that burned areas can still function as foraging area after a fire, depending on many factors including patch size, edge type, burn severity, and proximity to suitable unburned habitat and known owl sites (Bond et al. 2016, Bond et al. 2002, Bond et al. 2009, Clark 2007, Clark et al. 2011 and Clark et al. 2013). The Level 1 team recognized the importance of designating this habitat type and analyzing the effects from post fire salvage. Although edge effect foraging lacks key habitat components generally associated with NRF, they have the potential to provide foraging opportunities.

In areas where suitable NRF habitat is not present, NSO may still venture into moderate to high burn severities to forage. In the studies listed above, NSO are likely to forage in these burned areas closer to NRF than they are to forage in burned habitat further away from NRF. Therefore, in order to incorporate the information described above on NSO use of edge habitat in post fire landscapes, the edge effect foraging habitat was further refined. Using ArcGIS, a 500 foot and 1000 foot were applied to areas that are currently suitable NRF in moderate and high burn severity (greater than 5 acres). Within that 500 foot buffer (PFF1), any previous NRF habitat that burned moderate to high severity was identified as the edge foraging habitat. We estimated the most likely maximum distance NSO would forage from the edge of suitable NRF (Low fire severity or no fire effects) into suitable burned habitat burned at moderate or high severity to be approximately 500ft. This distance was derived from a combination of reviews of recent literature on the use of edge habitat as described above and USFWS biologists. ***Fire created edge foraging opportunities do occur in portions of the project treatment areas. A total of 233 acres of PFF occur within the project treatment units.***

Wildfire Impacts: Habitat Baseline

The Baseline adjustment for the Northern Spotted Owl and NSO Critical habitat completed within the FWS Interim Appendix B document dated on January 15, 2021 for wildfires in the years 2019-2020. Any baseline changes due to the August Complex were updated in this Appendix B document (separate document). *Fire suppression actions are discussed within the project action area in the document titled Plaskett-Keller August Complex Phase 1 Project Action Area Baseline document (Chow 2021).*

Fire intensities (i.e., rate of heat energy released per unit of fire front) and resultant severities (i.e., magnitude of fire effects on habitat, such as tree mortality), have been identified for the Mendocino National Forest. RAVG is a change detection process using two Landsat Thematic Mapper™ images captured before and after a wildfire. RAVG provides an approximation of areas burned and at what fire intensity. RAVG calculates basal area (BA), the area of the cross section of a tree stem including the bark, measured at breast height (4.5 feet above ground). Basal area is reported as four classes of percent change (fire intensity) in tree cover or basal area killed (Table 17).

The analysis for fire effects to the current habitat and action area are discussed below.

Table 18. 2020 RAVG Fire Intensity Ratings

Intensity Class	Percent BAK
1	0% - 25%
2	25% - 50%
3	50% - 75%
4	75% - 100%

Analysis Process

In 1995, the US Fish and Wildlife Service recommended analyzing a home range with a 1.3 mile radius from the center of activity equaling 3,380 acres. They considered that to be a viable home range, a minimum of 40% (1,336 acres) should be suitable nesting and foraging habitat in order to support a nesting pair of spotted owls. In more recent studies, it was found that, in dry forests (like the Mendocino), the strongest relationships between habitat and pairs of owls are at scales of approximately 400 to 600 acres (0.5 mile radius). This project used a 0.7 mile radius for the core area because it was determined there would be a may affect, likely to adversely affect the northern spotted owl. The mosaic of suitable habitat (combined nesting and foraging habitat) with other vegetation types at the 400 to 600 acre scale has a strong influence on occupancy, survival, and reproduction.

In 2009, the Forest Plan Habitat Capability Models were updated to consider the interspersions and juxtaposition of vegetation types at the 400 to 600 acre scale. In the southern (drier) parts of their range, studies of habitat at varying distances from a nest site or activity center consistently show that the habitat within approximately the first ≈ 0.8 kilometers (≈ 0.5 miles equaling ≈ 500 acres) are the most important (Dugger et al 2005, Meyer et al 1998, Swindle et al 1999, Ripple et al 1997, Zabel et al. 2003). Similar estimates of Core Habitat Area size can be derived from a research area where nearly every owl nest has been located, research areas scattered across a wider geographic area (e.g. Franklin et al 2000), and studies of the distribution of owl locations (e.g. Bingham and Noon 1997, Pious 1995).

For the habitat assessment, the 2020 RAVG layer was overlaid with Mendocino National Forest corporate vegetation layer to calculate the approximate changes in habitat conditions from the wildfires. This document uses Basal Area Loss as Killed (BAK) and measures the percent change in basal area or tree cover (relative number of live trees on the site) from the pre-fire condition to indicate habitat removed, downgraded and degraded for NSO.

Table 19. Post fire outcomes on existing NSO nesting/roosting and foraging habitat (*Cross walk table from FWS Interim Appendix B paper*).

Fire Intensity Class	Percent BAK	<u>Post-fire</u> Nesting/Roosting	<u>Post-fire</u> Foraging
1	0% - 25%	Degraded but maintained as Nesting/Roosting	Degraded but maintained as Foraging
2	25% - 50%	Degraded but maintained as Nesting/Roosting	Degraded but maintained as Foraging
3	50% - 75%	Removed to unsuitable	Removed to unsuitable
4	75% - 100%	Removed to unsuitable	Removed to unsuitable

Table 20 display the total acres by fire intensity class within the Action Area as well as the acres by NSO habitat nesting/roosting and foraging habitat (N/Rand F) by intensity class.

Table 20. NSO pre and post fire habitat change for the Plaskett-Keller August Complex Phase 1 action area

Pre-fire Habitat 2018	Post Fire Habitat 2020	Change in habitat acres
Dispersal (D)	Dispersal	2,440 (stayed the same)
Dispersal (D)	Non-suitable	4,343 (removed to unsuitable)
Foraging (F)	Foraging	2,473 (stayed F)
Foraging (F)	Non-suitable	3,887 (removed to unsuitable)
Nesting/Roosting (NR)	Non-suitable	3,572 (removed to unsuitable)
Nesting/Roosting (NR)	NR	1562 (stayed NR)

Table 21. Total acres of NSO N/R and Foraging (F) burned within the Action Area

Intensity Class	N/R	F
1	1,363 (stayed NR)	2,075 (stayed F)

2	199 (stayed NR)	398 (stayed F)
3	974 (removed to unsuitable)	357 (removed to unsuitable)
4	2,598 (removed to unsuitable)	3,530 (removed to unsuitable)

The August Complex burned 1,032,600 acres with 426,048 acres (~41%) of high severity, 138,521 acres (~13%) of moderate severity, 209,268 acres (~20%) of low severity, and 302,157 acres (~29%) of very low severity.

There is a total of 3,572 acres of NR removed, 3,887 acres of F habitat removed and 4,343 acres of dispersal habitat removed within the action area due to moderate to high burn severity (50-100% basal mortality) from the August Complex fire. Within the action area, a total of 2,598 acres of N/R habitat, 3,530 acres of foraging and 3,937 acres of dispersal habitat was burned at high severity (75-100% basal mortality). The project is proposed to treat 157.5 acres of previously suitable N/R, 510.3 acres of previously foraging habitat and 456 acres of previously dispersal that were burned at high severity.

Based on this, the project treatments will affect 6% of the high severity fire areas of the previously suitable N/R habitat, 14% of the high severity fire areas of the previously suitable foraging habitat and 11 % of the high severity fire area of the previously dispersal habitat within the AA.

There is a total of 17, 091 acres high burn severity acres within the project action area. The project will treat 12% of the total acres of high severity burned areas the AA.

The *Plaskett-Keller August Complex Phase 1 Complex Phase 1 Project* proposal includes approximately 944 acres of commercial, ground-based and 1,220 acres of roadside salvage and fuels treatment of fire-killed trees within high burn severity units. Hazard tree removal would be defined by 50-100% percent mortality (50% in unit 310 at Plaskett campground) or otherwise identified in accordance with *R5 Hazard Tree Guidelines* (Report# RO-11- 01) Within commercial roadside hazard tree removal units, a 1 tree length below and 1.5 tree length above the road would be used as the activity zone. For analysis purposes for the effects of NSO, a 200ft roadside buffer (400 feet maximum) was used. The estimated treatment acres is **2,164** combining both the roadside hazard tree removal units and the commercial salvage units.

The prescription of the proposed action differs slightly based on the units. Salvage and hazard tree removal will look to areas with 50-100% basal area mortality in severity class 4. These areas were burned at such high severity and are no longer suitable NSO habitat. The 200 foot road buffer created was for analysis purposes only. Not every tree along the hazard tree removal buffer would be removed. Only trees that are 50-100% probability mortality and pose a safety hazard to the road would be removed. If any predominate, legacy trees, also known as wildlife trees, are felled, they will also be left on site. Wildlife trees for retention will be marked prior to implementation (LRMP 1995).

Fuel reduction treatments will occur along the roadside areas. Fuels reduction treatments are designed to protect existing habitat characteristics while reducing ground and ladder fuels to be used in defense of wildfires. Un-merchantable fire-killed hazardous fuels and activity generated fuels (both considered here as excess fuels) within project units would be lopped and scattered first to a recommended depth for substrate cover and any additional remaining fuels, where fuel loading may exceed desired conditions, would be handled using the standard suite of methods including but not limited to hand or machine piling and burning, mastication/chipping, and/or removal for biomass opportunities.

Fire effects on the NSO Activity Centers within the Project action area

Seventeen NSO ACs fall into the 1.3 mile action area of the project units. Each were burned, to varying amounts and intensities, during the August Complex fire. There are nine ACs (with home ranges and core areas) that overlap with commercial salvage and roadside salvage units. The following displays the effects of the fires and impacts of treatments on the habitat within each AC.

Pinto Creek, MEN0019 AC #6048

The project proposes to treat **216.56** acres within 0.7 miles and **519.27** acres within 1.3 miles of territory #6048. This AC falls within salvage Unit 5 and 16 and road 22N73 harvested at 100% basal mortality

0.7 mile Core Area

The fire burned 95% of the core area, with approximately 74% burned at high intensity.

Of the available N/R and F pre-fire habitat within 0.7 miles, there were 128 acres of NR and 142 acres of foraging habitat.

The acres of N/R removed by the fire was 104 acres (81%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 128.7 (91%) acres of foraging habitat.

Table 22. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 miles of AC 6048

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	9.4	4.75
2 (25-50%)	15	8.15
3 (50-75%)	17 (removed to unsuitable)	15.7 (removed to unsuitable)
4 (>75%)	87 (removed to unsuitable)	113 (removed to unsuitable)

1.3 mile Home Range

Approximately 81% of the home range was burned, with the 64% burned at high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there was 287 acres of NR and 576 acres of foraging habitat.

The acres of N/R removed by the fire was 257.6 acres (90%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 444 (77%) acres of foraging habitat.

Table 23. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 6048

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	10.7	78.5
2 (25-50%)	19.3	54
3 (50-75%)	25.6 (downgraded to unsuitable)	60 (removed to unsuitable)
4 (>75%)	232 (removed to unsuitable)	384 (removed to unsuitable)

Keller Lake, GLE0025 AC #6037

The project proposes to treat **381.46** acres within 0.7 miles and **771.6** acres within 1.3 miles of territory #6037. This AC falls within salvage Units 20, 21, 26 and 272 at 100% basal mortality. This AC falls within salvage roads 22N11, 22N11A, 22N11B, 22N11D, 22N11J and 22N36 at 100% probability of mortality.

There is much overlap between Keller Lake and Butte Creek activity centers with commercial and roadside salvage treatment acres.

0.7 mile Core Area

The fire burned 58% of the core area, with approximately 47% burned at high intensity.

Of the available N/R and F pre-fire habitat within 0.7 miles, there were 236 acres of foraging habitat and 35 acres of NR.

The acres of N/R removed by the fire was 25.1 acres (72%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 201 (85%) acres of foraging habitat.

Table 24. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 6037

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	3	13.5
2 (25-50%)	7	18
3 (50-75%)	3.1 (removed to unsuitable)	15 (removed to unsuitable)
4 (>75%)	22 (removed to unsuitable)	186 (removed to unsuitable)

1.3 mile Home range

Approximately 72% of the home range burned with approximately 58% burned at high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 151 acres of NR and 833 acres of foraging habitat.

The acres of N/R removed by the fire was 126.7 acres (84%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 770.7 (92%) acres of foraging habitat.

Table 25. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 374

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	4.9	38.8
2 (25-50%)	5	67.4
3 (50-75%)	14.2 (removed to unsuitable)	89.7 (removed to unsuitable)
4 (>75%)	112.5 (removed to unsuitable)	681 (removed to unsuitable)

Butte Creek, GLE0002 AC #6082

The project proposes to treat **246** acres within 0.7 miles and **756.13** acres within 1.3 miles of territory #6043. This AC falls within salvage Units 13, 20, 21, 251 and 272 at 100% basal mortality. This AC falls within salvage roads 22N11, 22N11A, 22N11B, 22N11D, 22N11J, 22N25, 22N25A and 22N36 at 100% basal mortality.

There is much overlap between Keller Lake and Butte Creek activity centers with commercial and roadside salvage treatment acres.

0.7 mile Core Area

The fire burned 94% of the core area, with approximately 78% burned at high intensity.

Of the available N/R and F pre-fire habitat within 0.7 miles, there were 87 acres of NR and 235 acres of foraging habitat.

The acres of N/R removed by the fire was 79.1 acres (91%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 200 (85%) acres of foraging habitat.

Table 26. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 352

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	3.54	14.7
2 (25-50%)	4	19
3 (50-75%)	5.1 (removed to unsuitable))	21 (removed to unsuitable)
4 (>75%)	74 (removed to unsuitable)	179 (removed to unsuitable)

1.3 mile Home Range

Approximately 62% of the home range was burned, with the 48% burned at high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 220 acres of NR and 574 acres of foraging habitat.

The acres of N/R removed by the fire was 179.6 acres (82%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 486 (85%) acres of foraging habitat.

Table 27. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 250

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	15	31.1
2 (25-50%)	25.7	57
3 (50-75%)	26 (removed to unsuitable)	74 (removed to unsuitable)
4 (>75%)	153.6 (removed to unsuitable)	412 (removed to unsuitable)

Cold Creek, GLE0001 AC #3024

The project proposes to treat **0.71** acres within 0.7 miles and **315.91** acres within 1.3 miles of territory #3024. This AC falls within salvage Units 26, 29, 32, 270 and 340 harvested 70 and 100% basal mortality. This AC falls within salvage roads 22N10, 22N23, 22N23A, 22N54, 22N64 and FH7 harvested at 100% basal mortality

0.7 mile Core Area

The fire burned 70% of the core area, with approximately 50% burned at moderate to high intensity.

Of the available N/R and F pre-fire habitat within 0.7 miles, there were 369 acres of NR and 172 acres of foraging habitat.

The acres of N/R removed by the fire was 340 acres (92%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 86.9 (51%) acres of foraging habitat.

Table 28. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 3024

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	10	54
2 (25-50%)	13	35.2
3 (50-75%)	140 (removed to unsuitable)	21.9 (removed to unsuitable)
4 (>75%)	200 (removed to unsuitable)	65 (removed to unsuitable)

1.3 mile Home Range

Approximately 31% of the home range was burned, with the 21% burned at high to very high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 747 acres of NR and 610.7 acres of foraging habitat.

The acres of N/R removed by the fire was 726 acres (97%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 292.3 (48%) acres of foraging habitat.

Table 29. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 3024

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	10	212.7

2 (25-50%)	11	106
3 (50-75%)	138 (removed to unsuitable)	164.3 (removed to unsuitable)
4 (>75%)	588 (removed to unsuitable)	128 (removed to unsuitable)

Shepperd Ridge, GLE0011 AC #3005

The project proposes to treat **69.7** acres within 0.7 miles and **165.59** acres within 1.3 miles of territory #3005. This AC does not fall in any of the commercial salvage units. This AC falls within salvage road 21N17A and FH7 harvested at 100% basal mortality.

0.7 mile Core Area

The fire burned 54% of the core area, with approximately 12% burned at high intensity. Of the available N/R and F pre-fire habitat within 0.7 miles, there were 116 acres of NR and 168 acres of foraging habitat.

The acres of N/R removed by the fire was 76 acres (65%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 83.9 (50%) acres of foraging habitat.

Table 30. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 3005

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	30	79.5
2 (25-50%)	10	4.6
3 (50-75%)	73 (removed to unsuitable)	0.96 (removed to unsuitable)
4 (>75%)	3 (removed to unsuitable)	83 (removed to unsuitable)

1.3 mile Home Range

Approximately 20% of the home range was burned, with 15% burned at very high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 316 acres of NR and 369.5 acres of foraging habitat.

The acres of N/R removed by the fire was 57 acres (18%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 108.1 (29%) acres of foraging habitat.

Table 31. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 3005

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	200	264.73
2 (25-50%)	59	24.4
3 (50-75%)	34 (removed to unsuitable)	8.6 (removed to unsuitable)
4 (>75%)	23 (removed to unsuitable)	99.5 (removed to unsuitable)

Kill Dry, GLE0003 AC #3006

No treatments are proposed within 0.7 miles of the AC. The project proposes to treat **8.39** acres within 1.3 miles of territory #3006. This AC does not fall within any commercial salvage Units. This AC falls within salvage road FH7 harvested at 100% basal mortality

0.7 mile Core Area

The fire burned 100% of the core area, with approximately 70% burned at high intensity.

Of the available N/R and F pre-fire habitat within 0.7 miles, there were 379 acres of NR and 101.5 acres of foraging habitat.

The acres of N/R removed by the fire was 92 acres (24%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 5.2 (0.5%) acres of foraging habitat.

Table 32. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 243

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	270	88.4
2 (25-50%)	37	8.1
3 (50-75%)	33 (removed to unsuitable)	3.2 (removed to unsuitable)
4 (>75%)	59(removed to unsuitable)	2 (removed to unsuitable)

1.3 mile Home Range

Approximately 89% of the home range was burned, with the 4% burned at high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 556 acres of NR and 367 acres of foraging habitat.

The acres of N/R removed by the fire was 57 acres (10%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 57 (15%) acres of foraging habitat.

Table 33. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 243

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	450	261.33
2 (25-50%)	60	43
3 (50-75%)	12(removed to unsuitable)	52 (removed to unsuitable)
4 (>75%)	45 (removed to unsuitable)	5(removed to unsuitable)

Harvey Spring Ridge, GLE0004 AC #3048

No treatments are proposed within 0.7 miles of the AC. The project proposes to treat **23.15** acres within 1.3 miles of territory #3048. This AC does not fall within any commercial salvage units. This AC falls within salvage road 22N13 and FH7 harvested at 100% basal mortality

0.7 mile Core Area

The fire burned 18% of the core area, with approximately 10% burned at high intensity.

Of the available N/R and F pre-fire habitat within 0.7 miles, there were 138 acres of NR and 395 acres of foraging habitat.

The acres of N/R removed by the fire was 26 acres (19%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 157 (40%) acres of foraging habitat.

Table 34. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 3048

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	29	217.5
2 (25-50%)	83	19.5
3 (50-75%)	6 (removed to unsuitable)	14 (removed to unsuitable)
4 (>75%)	20 (removed to unsuitable)	143 (removed to unsuitable)

1.3 mile Home Range

Approximately 20% of the home range was burned, with the 4% burned at high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 266 acres of NR and 885.5 acres of foraging habitat.

The acres of N/R removed by the fire was 17 acres (6%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 91.5 (10%) acres of foraging habitat.

Table 35. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 372

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	77	637
2 (25-50%)	44	157
3 (50-75%)	0 (removed to unsuitable)	38 (removed to unsuitable)
4 (>75%)	17 (removed to unsuitable)	53.5 (removed to unsuitable)

GLE0035 #3062 (this is an AC that was not in the Forest Service data base, but only the State California Natural Diversity Database- CNDDB)

No treatments are proposed within 0.7 miles of the AC. The project proposes to treat 112.6 acres within 1.3 miles of territory GLE0035. This AC does not fall within any commercial salvage Units. This AC falls within salvage road FH7 harvested at 100% basal mortality.

0.7 mile Core Area

The fire burned 99% of the core area, with approximately 84% burned at high intensity in the action area.

Of the available N/R and F pre-fire habitat within 0.7 miles in the action area, there were 223 acres of NR and acres of 444.6 acres of foraging habitat.

The acres of N/R removed by the fire was 203.7 acres (91%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 413.9 (93%) acres of foraging habitat.

Table 36. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 miles of AC GLE0035 in the action area

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	7.5	12.3
2 (25-50%)	9	15.6

3 (50-75%)	12.3 (removed to unsuitable)	28.3 (removed to unsuitable)
4 (>75%)	191.4 (removed to unsuitable)	385.6 (removed to unsuitable)

1.3 mile Home Range

Approximately 97% of the home range was burned, with the 77% burned at high intensity in the action area.

Of the available N/R and F pre-fire habitat within 1.3 miles, there was 404 acres of NR and 1,026 acres of foraging habitat.

The acres of N/R removed by the fire was 300.3 acres (44%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 931.5 (29%) acres of foraging habitat.

Table 37. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 6048 in the action area

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	44.1	40.8
2 (25-50%)	23.7	43.8
3 (50-75%)	27.1 (removed to unsuitable))	58 (removed to unsuitable)
4 (>75%)	273.2 (removed to unsuitable)	873.5 (removed to unsuitable)

South Branch Board Creek, GLE0023 AC #3009

No treatments are proposed within 0.7 miles of the AC. The project proposes to treat **58.73** acres within 1.3 miles of territory #3009. This AC does not fall within any commercial salvage Units. This AC falls within salvage road FH7 harvested at 100% basal mortality

0.7 mile Core Area

The fire burned 64% of the core area, with approximately 40% burned at high intensity.

Of the available N/R and F pre-fire habitat within 0.7 miles, there were 281 acres of NR and 187 acres of foraging habitat.

The acres of N/R removed by the fire was 229 acres (81%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 82.3 (%) acres of foraging habitat.

Table 38. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 388 in the AA

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	22	69.8
2 (25-50%)	30	29
3 (50-75%)	73 (removed to unsuitable)	11.27 (removed to unsuitable)
4 (>75%)	156 (removed to unsuitable)	71 (removed to unsuitable)

1.3 mile Home Range

Approximately 95% of the home range was burned, with the 20% burned at high to very high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 378 acres of NR and 478 acres of foraging habitat.

The acres of N/R removed by the fire was 315 acres (83%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 422 (88%) acres of foraging habitat.

Table 39. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 388

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	38	15
2 (25-50%)	25	32
3 (50-75%)	43 (removed to unsuitable)	53 (removed to unsuitable)
4 (>75%)	272 (removed to unsuitable)	369 (removed to unsuitable)

Billy Pike Ridge, MEN0270 AC #6056

No treatments are proposed within 0.7 miles and 1.3 miles of the AC.

0.7 mile Core Area

The core area is not located within the Action Area.

1.3 mile Home Range

Approximately 56% of the home range was burned, with approximately 22% burned at high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 78 acres of NR and 18 acres of foraging habitat.

The acres of N/R removed by the fire was 20 acres (25%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 11.32 (63%) acres of foraging habitat.

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Table 40. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC in the AA

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	11	7
2 (25-50%)	47	0.2
3 (50-75%)	0 (removed to unsuitable)	0.32 (removed to unsuitable)
4 (>75%)	20 (removed to unsuitable)	11(removed to unsuitable)

O' Neil Creek, MEN0040 AC #6085

No treatments are proposed within 0.7 miles and 1.3 miles of the AC.

0.7 mile Core Area

The fire burned 38% of the core area, with approximately 2% burned at high intensity.

Of the available N/R and F pre-fire habitat within 0.7 miles, there were 4.5 acres of NR and 60 acres of foraging habitat.

The acres of N/R removed by the fire was 4.3 acres (95%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 52.6 (87%) acres of foraging habitat.

Table 41. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 372

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	0	3
2 (25-50%)	.2	4.4
3 (50-75%)	0.7 (removed to unsuitable)	6.6 (removed to unsuitable)
4 (>75%)	3.6 (removed to unsuitable)	46 (removed to unsuitable)_

1.3 mile Core Area

The fire burned 51% of the 1.3 mile area, with approximately 48% burned at high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 21.2 acres of NR and 421 acres of foraging habitat.

The acres of N/R removed by the fire was 21.2 acres (100%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 408.5 (97%) acres of foraging habitat.

Table 42. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC in the AA

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	0	5.5
2 (25-50%)	0	7
3 (50-75%)	0	11.5 (removed to unsuitable)
4 (>75%)	21.2 (removed to unsuitable)	397 (removed to unsuitable)

McCoey Ridge, MEN0271 AC #6057

No treatments are proposed within 0.7 miles and 1.3 miles of the AC.

0.7 mile Core Area

The core area is not located within the Action Area.

1.3 Mile Home Range

Approximately 45% of the home range was burned, with the 64% burned at high to very high intensity.

Of the pre-fire N/RF habitat, there is 0 acres of NR and 30.7 acres foraging habitat.

Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 30.7 (100%) acres of foraging habitat.

Table 43. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 372

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	0	0
2 (25-50%)	0	0

3 (50-75%)	0	0
4 (>75%)	0	30.7 (removed to unsuitable)

Barb Ridge, GLE0033 AC #3034

No treatments are proposed within 0.7 miles and 1.3 miles of the AC.

0.7 mile Core Area

Approximately 29% of the core was burned, with the 9% burned at high to very high intensity.

Of the pre-fire N/RF habitat, there is 98.6 acres of NR and 66.6 acres foraging habitat.

The acres of N/R removed by the fire was 12 acres (12%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 12 (18%) acres of foraging habitat.

Table 44. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 0.7 mi of AC 3034

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	20	0.7
2 (25-50%)	0	17.2
3 (50-75%)	8.52 (removed to unsuitable)	5 (removed to unsuitable)
4 (>75%)	3.48 (removed to unsuitable)	11.5 (removed to unsuitable)

1.3 Mile Home Range

Approximately 83% of the home range was burned, with the 49% burned at high to very high intensity.

Of the pre-fire N/RF habitat, there is 296 acres of NR and 245.5 acres foraging habitat.

The acres of N/R removed by the fire was 100 acres (34%). Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 213.2 (87%) acres of foraging habitat.

Table 45. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 3034

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
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1 (0-25%)	60	13
2 (25-50%)	136.5	19.3
3 (50-75%)	16 (removed to unsuitable)	20.7 (removed to unsuitable)
4 (>75%)	84 (removed to unsuitable)	192.5 (removed to unsuitable)

Brushy Mountain, GLE0027 AC #3025

No treatments are proposed within 0.7 miles and 1.3 miles of the AC.

0.7 mile Core Area

The core area is not located within the Action Area.

1.3 mile home range

Approximately 70% of the home range was burned, with the 0% burned at high to very high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 0 acres of NR and 1.15 acre of foraging habitat.

No N/R habitat was present in the home range in the action area; therefore, no N/R habitat was removed.

Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 0.1 (8.7%) acres of foraging habitat.

Table 46. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 3025

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	0	0.73
2 (25-50%)	0	0.05
3 (50-75%)	0	0.07 (removed to unsuitable)
4 (>75%)	0	0.3 (removed to unsuitable)

East Kill Dry, GLE0028 AC #3007

No treatments are proposed within 0.7 miles and 1.3 miles of the AC.

0.7 mile Core Area

The core area is not located within the Action Area.

1.3 mile Core Area

Approximately 10% of the home range was burned, with the 6% burned at high to very high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 27 acres of NR and 206 acres of foraging habitat.

The acres of N/R removed by the fire was 2.64 acres (1%).

Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 103 (50%) acres of foraging habitat.

Table 47. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 3007

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	23.6	94
2 (25-50%)	0.74	9.4
3 (50-75%)	0.34 (removed to unsuitable)	10.7 (removed to unsuitable)
4 (>75%)	2.3 (removed to unsuitable)	92.3 (removed to unsuitable)

Board Creek, TEH0001 AC #1049

No treatments are proposed within 0.7 miles and 1.3 miles of the AC.

0.7 mile Core Area

The core area is not located within the Action Area.

1.3 mile Core Area

Approximately 88% of the home range was burned, with the 67% burned at high to very high intensity.

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 106 acres of NR and 91.4 acres of foraging habitat.

The acres of N/R removed by the fire was 101 acres (95%).

Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 87.9 (96%) acres of foraging habitat.

Table 48. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 1049

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	0	2.4
2 (25-50%)	0	1
3 (50-75%)	12.9 (removed to unsuitable)	2.3 (removed to unsuitable)
4 (>75%)	93.1 (removed to unsuitable)	85.6 (removed to unsuitable)

Shepherd Ridge GLE0012 (3008)

Approximately 7.1% of the home range was burned, with the 5.5% burned at high to very high intensity.

No treatments are proposed within 0.7 miles and 1.3 miles of the AC.

0.7 mile Core Area

The core area is not located within the Action Area.

1.3 mile Home Range

Of the available N/R and F pre-fire habitat within 1.3 miles, there were 35 acres of NR and 7.1 acres of foraging habitat.

The acres of N/R removed by the fire was 3 acres (8.5%).

Since moderate-intensity class (3) F is removed to unsuitable there was a loss of 1.4 (20%) acres of foraging habitat.

Table 49. Acres of nesting/roosting/foraging habitat burned by fire intensity class within 1.3 mi of AC 3008

Fire Intensity Class	Acres of NR by Intensity Class	Acres of F by Intensity Class
1 (0-25%)	30.4	4.6
2 (25-50%)	1.6	1.1
3 (50-75%)	0.7 (removed to unsuitable)	1.4 (removed to unsuitable)

4 (>75%)	2.3 (removed to unsuitable)	0
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Post Fire Habitat Conditions of NSO ACs within the Action Area (AA)

There were drastic habitat changes in the majority of ACs. The table below shows the habitat loss for each AC within the AA.

Table 50. Pre and Post-fire Habitat conditions by AC in the AA

NSO Site	Habitat	Pre August Fire		Post August Fire	
		0-0.7mi	0-1.3mi	0-0.7mi	0-1.3mi
Pinto Creek (MEN0019)	NR	128	287	24	29
AC6048	F	142	576	13.3	132
	D	138.4	527.5	47.2	196.5
	total NRF	270	863	37.3	161
Keller Lake (GLE0025)	NR	34.7	151	9.9	24.3
AC374	F	236	833	35	62.3
	D	351	706.6	9.7	156
	total NRF	270.7	984	44.9	86.6
Butte Creek (GLE002)	NR	87	180	7.9	40.4
	F	234.5	574	35	88
	D	213.2	601	9.5	193.4
	total NRF	321.5	754	42.9	128.4
Cold Creek (GLE0001)	NR	369	747	29	21

	F	172	610.7	85	318
	D	38	467	34	384
	total NRF	541	1,357.7	114	339
Shepherd Ridge (GLE0011)	NR	116	316	40	259
	F	168	396.5	84	261
	D	436	1336	203	466
	total NRF	284	712.5	124	520
Shepherd Ridge (GLE0012)	NR	0	35	0	32
	F	0	7.1	0	5.7
	D	0	0.2	0	0.2
	total NRF	0	42.1	0	37.7
Board Creek (TEH0001)	NR	0	106	0	5
	F	0	91.4	0	3.5
	D	0	81	0	21
	total NRF	0	197.4	0	8.5
South Branch Board Creek (GLE0023)	NR	281	378	52	63
	F	187	478	105	56
	D	110.4	273.5	38	84
	total NRF	468	856	157	119

Kill Dry (GLE0003)	NR	379	556	287	499
	F	101.5	366.8	96.3	310
	D	88	608	73	518
	total NRF	480.5	922.8	383.3	809
O'Neil Creek (MEN0040)	NR	4.5	21.2	0.3	0
	F	60	421	7.4	12.5
	D	95.5	420.7	10	64
	total NRF	64.5	442.2	7.7	12.5
Harvey Spring Ridge (GLE0004)	NR	138	266	112	249
	F	394	885.5	238	794
	D	80	427.4	53	338
	total NRF	232	1,151.5	350	1,043
Mcoy Ridge (MEN0270)	NR	0	0	0	0
	F	0	30.7	0	0
	D	0	16.8	0	9.3
	total NRF	0	30.7	0	0
Barb Ridge (GLE0033)	NR	98.6	296	87	196
	F	66.6	245.5	54.6	32.3
	D	29	22.2	20	18.3
	total NRF	165.2	541.5	141.6	228.3

East Kill Dry (GLE0028)	NR	0	27	0	2.5
	F	0	206	0	100
	D	0	25.4	0	15.1
	total NRF	0	233	0	102.5
Billy Pike Ridge (MEN0270)	NR	0	78	0	58
	F	0	18	0	7
	D	0	44	0	8.55
	total NRF	0	96	0	65
Brushy Mountain (GLE0027)	NR	0	0	0	0
	F	0	1	0	0.9
	D	0	0	0	0
	total NRF	0	1	0	0.9
GLE0035 (3062)	NR	223	404	19	104
	F	446	1,026	31	94.5
	D	111	344	11.5	41.5
	total NRF	669	1,430	505	198.5

Forest Service Sensitive Species

Northern Goshawk

Existing Condition

The northern goshawk breeds throughout Alaska, Canada, and mountains of western United States and Mexico and winters to central-eastern United States and northern Mexico (Squires and

Reynolds 1997, AOU 1998). Goshawks appear to select habitat by forest structure rather than by tree species (Greenwald et al. 2005). Goshawks prefer mature and old-growth forests that are at middle to high elevations, have relatively dense canopy closures (>40%), have usually little understory vegetation, are in close proximity to riparian corridors, and have flat or moderately sloping terrain (Crocker-Bedford and Chaney 1988; Moore and Henny 1983; Saunders 1982; Zeiner et al. 1990). Adequate canopy cover appears to be critical for occupancy and productivity of nest sites. Canopy cover is likely used to protect chicks from predation and for thermoregulation.

Goshawks nest in forested habitat across their range and across all elevations (Squires and Reynolds 1997). Northern Goshawks nest in areas with larger diameter trees, higher canopy closure, and understory clear of debris (Squires and Ruggiero 1996, Squires and Reynolds 1997). Goshawks are known to use mature forest habitats for nesting and foraging. Nesting stands are typically in dense pockets of large trees, often on north-facing, bench slopes near water.

Habitat

California Wildlife Habitat Relationship System (CWHR) lists the following as reproductive habitat for northern goshawks across California, not all of the listed habitats occur within the Plaskett-Keller action area: aspen, Douglas-fir, eastside pine, Jeffrey pine, juniper, Klamath mixed conifer, lodgepole pine, montane hardwood, montane hardwood-conifer, montane riparian, pinyon juniper, ponderosa pine, red fir, Sierran mixed conifer, subalpine conifer, and white fir.

The Mendocino LRMP describes the optimum habitat for goshawks as Conifer/hardwood 4N/G, 5N/G; mixed conifer 4N/G, 5N/G; red fir 4N/G, 5N/G; and white fir 4N/G, 5N/G; and sub-optimum habitat is described as conifer/hardwood 4P; mixed conifer 4P, 3N/G; red fir 3N/G; and white fir 3N/G.

Northern goshawk prey species include squirrels, rabbits, woodpeckers, jays, and grouse (Reynolds et al. 1992). Important features for these prey species include snags, brushfields, and understory structure for their life cycle needs.

Sightings

There were three goshawk nests located near Salmon Creek in 1981. These nests are located outside of the project action area. It is unknown if these nests are still active let alone available for use due to the August fire. Four historical sightings of goshawks have been detected within the action area near Mendocino Pass, Bredhoft Place, Smith Camp and Chimney Rock. None of these sightings land within in timber salvage and roadside units. Even with high severity burn (75-100% BAK) across the project area landscape, some potential suitable habitat is still present. Much of the nesting habitat has been removed from the fire, however, dispersal and some foraging habitat is still present.

Bald Eagle (*Haliaeetus leucocephalus*)

Existing Condition

Bald Eagles breed primarily across northern North America and occur during migration and the non-breeding season south through northern Mexico (AOU 1998, Buehler 2000). Bald eagle breeding and wintering distributions are continuous, but year-round populations are patchy and distributed mainly near large bodies of water. Bald eagles in California and Nevada breed in large conifers near freshwater lakes and along large rivers that provide adequate fish resources for feeding young, and they winter primarily in coastal estuarine habitats where fish are abundant (Small 1994, Buehler 2000). Most nests are located within 1.6 km of a large body of water (Lehmann 1979, Anthony et al. 1982). In northern California nest territories were comprised of ponderosa pine (*Pinus ponderosa*) and sugar pine (*Pinus lambertiana*) (Lehmann 1979). In California, large diameter trees were used for nesting (average of 43 in. DBH) and for roosting (ranging from 17-41 in. DBH) with an age from 131-311 years (Anthony et al. 1982).

The two primary threats to bald eagle recovery continue to be environmental contaminants and degradation of nesting and roosting habitat (USDI 1995). These threats result from direct cutting of trees for shoreline development, human disturbance associated with recreational use of shorelines and waterways, and contamination of waterways from point and non-point sources of pollution. Dependence on very large trees associated with water makes the eagles vulnerable to water associated development pressures.

The bald eagle was removed from federal listing on July 9th, 2007.

Habitat

California Wildlife Habitat Relationship System (CWHR) lists the following as reproductive habitat for bald eagles across California, not all of the listed habitats occur within the Black Butte analysis area: blue oak-foothill pine, blue oak woodland, coastal oak woodland, desert riparian, Douglas-fir, eastside pine, eucalyptus, Jeffrey pine, Klamath mixed conifer, montane hardwood, montane hardwood-conifer, montane riparian, ponderosa pine, red fir, Sierran mixed conifer, subalpine conifer, valley foothill riparian, valley oak woodland, and white fir.

The Mendocino LRMP describes optimum habitat for bald eagles as Conifer/hardwood 4S/P, 5S/P; Douglas-fir 4S/P, 5S/P; mixed conifer 4S/P, 5S/P; ponderosa pine 4S/P, 5S/P; and sub-optimum habitat is described as conifer/hardwood 4N, 5N; Douglas-fir 4N, 5N; mixed conifer 4N, 5N; and ponderosa pine 4N, 5N.

Sightings

There have been three sightings of bald eagles all along or adjacent to FH7 within the project action area with sightings occurring in 1970, 1980 and 1981. No known nest have been confirmed. No recent sightings have been recorded since 1981. The only known bald eagle nest sites on the

forest are located at Lake Pillsbury and surrounding areas, 15 miles from the project action area. Due to a lack of large bodies of water, nesting is not likely occurring in the project action area.

American Peregrine Falcon

Existing Conditions

Peregrine falcons inhabit rocky coasts in all continents except for Antarctica (Ratcliffe, 1993). A migratory species, Peregrines have established nesting populations in the Arctic and as far south as Tasmania, South Africa and the Falkland Islands (Blood, 2001). A 1991 survey estimated nearly 1600 breeding pairs in Great Britain and Ireland (Ratcliffe, 1993). The USFWS 1998 survey found 1,650 breeding pairs in the United States and Canada. Several thousand breeding pairs have been estimated in the Arctic (Blood, 2001).

Peregrine falcons are bird hunters and are one of the fastest and most aerial predators, using an array of tactics for searching out, attacking, capturing and killing their prey (Cade, 1982). A list of 210 prey species ranging in size from small passerines to large waterfowl have been recorded for central European Peregrines (Ratcliffe, 1993). The preferred prey are columbiform birds (doves and pigeons) making up 20 to 60 percent of the falcon's diet when available (Cade, 1982).

Habitat

Preferred nest sites are sheer cliffs >150 feet in height (USDI 1982). This species prefer cliff faces with large potholes or ledges that are inaccessible to land predators and are preferentially located near habitat that has large avian prey population such as wetlands and waterways. On the Mendocino National Forest, volcanic rock outcrops and cliff faces provide several potential sites for nesting. Their diet consists entirely of birds (Bent 1938, Herbert and Herbert 1965), however, peregrines have been determined to also take small mammals (Kirven et al. 1988, Monk 1981) and fish. In California, most nest sites are >150 feet in height with a southern exposure (Boyce and White 1979).

Nests and specific nesting sites are re-used from generation to generation by the Peregrine falcon, often to the exclusion of other suitable looking sites in the same region (Cade, 1982).

Foraging habitat includes wooded areas, marshes, open grasslands, and bodies of water. Avian prey must be available and abundant within 6-12 miles of a nest site (Snow 1972). A peregrine home range can cover up to 289,790 acres. Riparian/ meadow habitats are ranked the most important for avian prey species. Mixed conifer and montane hardwood stands are equally ranked for importance and montane hardwood conifer is ranked slightly less.

Sightings

Aerial surveys were conducted in 1978 and 1979 to identify any potential nesting sites. Potential nesting sites on the Mendocino were determined by a study conducted in 1979 by the wilderness research institute (Boyce and White 1979).

There are no known active peregrine falcon nest sites in the project and action area. One unconfirmed sighting was reported on Pinto Ridge in 1982.

Three confirmed nest sites and nine potential nest sites occur within 10 miles of the project area boundary:

Hammerhorn Lake, Beaver Creek, Steele Bench, Hell Hole Canyon, Montequ, Twin Rocks, Killgore, Table Rock, Chimney Rock, Calamese Rock, Panther Rock and Salt Creek were identified as potential nest sites.

North American Wolverine (*Gulo luteus*)

Existing Conditions

Wolverines are distributed across the circumpolar northern hemisphere (Banci 1994; USFWS 2011a) and their range extends south along connected mountain ranges (Pasitschniak-Arts and Larivière 1995). Historically in North America, they were found from Alaska to eastern Canada (Banci 1994; Pasitschniak-Arts and Larivière 1995) and south across the Canada-US border provinces and states, and extended south along the Rocky Mountains to Arizona and New Mexico and along the west coast and Sierra Nevada Mountains (Banci 1994; Pasitschniak-Arts and Larivière 1995).

In North America, wolverines are found in boreal forests, tundra and the western mountains of Alaska and Canada with the southern portion of their range coming into the contiguous United States. Historic information suggests that wolverines were found in the northeast, great lakes, central plains, Rocky Mountains (possibly as far south as New Mexico) and in the Pacific Mountains, primarily in the Washington Cascades and Sierra Nevada (Aubry et al. 2007). Historical records correlated with vast expanses of alpine vegetation, climatic conditions or likelihood of spring snow cover in the Pacific Mountains. Persistent snow during the denning period (April 15-May 14) is essential for reproduction (USFWS 2013).

They have huge home ranges of 27 to 77 square miles in the northern Rocky Mountains, and over 347.5 square miles in some areas of North America. Individuals may move great distances on a daily basis. Denning structural components include rocky areas, large logs, hollow trees and snags, root wads, large slash piles, snow tunnels, abandoned beaver lodges, and abandoned dens. Dispersal appears to be influenced by human presence and activity rather than habitat structure (Zeiner et al. 1990).

The southern extent of the wolverine's range is discontinuous and is found in mountainous terrain. In the contiguous US, wolverines are found in, Montana, Wyoming, Idaho, Oregon, Washington, and, recently, California (Moriarty et al. 2009) and Colorado (USFWS 2013). On the west coast, wolverine population probably existed in two centers – the Northern Cascades and the Sierra Nevada Mountains (USFWS 2013).

Habitat

Wolverines are restricted to boreal forests, tundra, and western mountains. The vegetation zones occupied by wolverines include the arctic tundra, subarctic-alpine tundra, boreal forest, northeast mixed forest, redwood forest, and coniferous forest (Banci 1994).

Strata labels that identify potential wintering habitat on the Mendocino are MG4, M6G, M3G, R4G and D4X. The high altitudes and isolation of the Yolly Bolly and Snow Mountain Wilderness are the most likely places to provide summer homes for wolverines on the Mendocino. Wintering habitat could potentially be located throughout the forest where mid or late successional habitat occurs.

Within the Black Butte Watershed there is about 58,854 acres of reproductive habitat types for the wolverine pre-fire. With how much of the area burned at high severity, much of the potential reproductive habitat no longer is suitable.

Sightings

Six historical sightings have been reported on the forest with the nearest track detection (1994) only 2 miles from the project action area along Forest Highway 7 at Jump Off Creek.

American Marten (*Martes americana*)

Existing Conditions

Martens are found from Newfoundland and Nova Scotia to Alaska and south into the Rocky Mountains and California. They are found sporadically in New York, Michigan, Minnesota, Maine, and Wisconsin (Ellis 1999). Martens are uncommon to common as a permanent resident of North Coast regions and Sierra Nevada, Klamath, and Cascade Mountains (CWHR 2008).

Habitat

Martens primarily inhabit mature forests of lodgepole pine, Douglas-fir, spruce, and mixed hardwood forests. They use structurally complex, mature forests, and can occur at all elevations where this habitat is available. They den in hollow trees, crevices, or vacant ground burrows (Ellis 1999).

The California Wildlife Habitat Relationships System lists the following habitats as suitable for martens, not all of these habitats exist within the Black Butte watershed: aspen, barren, Douglas-fir, eastside pine, Jeffrey pine, Klamath mixed conifer, lodgepole pine, montane hardwood-conifer, montane riparian, pasture, perennial grassland, ponderosa pine, red fir, Sierran mixed conifer, subalpine conifer, wet meadow, and white fir.

The Mendocino LRMP describes optimum habitat for the marten as seral stages of 4 and 5 for denning and resting and 3, 4, and 5 for foraging with canopy closures of greater than 70% and 41-70%, respectively. Snags are important denning features and for optimum habitat the LRMP suggests more than 3 snags per acre that are greater than 24" DBH and 2-3 snags at 24" DBH for sub-optimum.

A minimum of 2100 acres of moderate quality habitat is required for the home range of one male and two females (1400 acres is required in high quality habitat) (Freel 1991). A minimum stand

size of 80 to 120 acres of adjacent mature forest stands are required for moderate quality denning/resting habitat with marten home ranges.

Sightings

There are two recorded marten sightings within the action area near Mendocino Pass and Kill Dry Ridge. Detections occurred in 1989 and 1990.

Pacific Fisher (*Martes pennanti*)

Existing Conditions

Fisher distribution is across sub-boreal Canada and the eastern US, and extends south into the US along mountain ranges in the west (Lofroth et al. 2010; Patterson et al. 2007). In California, Oregon, Washington, and British Columbia the fisher is found generally west of the Cascade Range and coastal and Sierra Nevada mountains.

Within its range, the distribution of the fisher is reduced from its former extent. In California there are two isolated populations. One is in the Klamath-Siskiyou Mountains in southern Oregon and northern California, and the Coast Range. Adjacent to this area on the east and southeast is the southern Cascades and northern Sierra Nevada. The second population identified is in the southern Sierra Nevada (Lofroth et al. 2010).

There are three subspecies, separated geographically; genetic separateness is not currently settled: in eastern North America, *M. p. pennanti*; in the Rocky Mountains, *M. p. columbiana*; and in western Canada south to California, *M. p. pacifica* (Lofroth et al. 2010). In 2004, the USFWS published a proposed rule that listed population on the western coast and Sierra Nevada Mountains as a Distinct Population Segment (USFWS 2004). The fisher was petitioned for listing as threatened or endangered last in 2010, and in 2012 the USFWS concluded that listing may be warranted, but is precluded. It remains in Candidate status.

Habitat

In northern California, fisher habitat consists of old-growth conifer and closed canopy forest, sapling and poles, and seedlings stands. Fisher habitat at the home range scale contains a diversity of vegetation types. Closed canopies (>50%) are typically selected but fishers will use areas of low to moderate canopy cover (25-40%) if there is sufficient understory (Lofroth et al. 2010). They do not occur in high-elevation alpine or subalpine habitats.

Conifers generally dominate the forested stands, but hardwoods become more present in southern parts of its range. Because hardwoods, especially large, branching oaks and cottonwoods, form suitable den and rest structures, these trees are important where they are rare. Hardwoods are particularly important in California fisher home ranges. Where oaks are present, the mast they produce is important for fisher prey and may result in smaller home ranges where oaks are a significant part of the landscape (Lofroth et al. 2010).

Fishers use a wider array of vegetation and structural stages when foraging than when resting. Structural stage use reflects that of prey habitat and will include stages other than late-successional habitat. Also, foraging sites more often than not have more coarse woody debris and were more structurally complex than unused sites, again a reflection of fisher prey habitat selection (Lofroth et al. 2010).

Rest sites are strongly associated with moderate to dense forest canopy and elements of late-successional forests (Lofroth et al. 2010). Rest sites in northern California typically have >50% canopy cover and an average dbh of 30-45in for the 5 largest trees in the immediate area. These areas will often have a higher density of snags and large downed wood. Due to high temperatures, rest sites in this region often occur in the bottom of drainages or within 100m of water. Cavities, mistletoe blooms, branch deformities and platforms in live trees and snags (conifers and hardwoods) are used for rest sites as well as logs, rock areas, brush piles and concentrations of downed woody debris.

Habitat Characteristics for fisher

Denning/resting	>50% canopy cover, large live and dead trees, large woody debris
Foraging	≥40 – 50% Canopy Cover, may lack denning trees
Movement	≥20% overhead cover regardless of tree size

Cavities in live trees and snags are critical for reproduction. Females use cavities in a variety of tree species (Douglas fir, Ponderosa pine, Black oak etc.) but live hardwoods appear to be particularly important in northern California. Most cavities used as natal and weaning dens are formed from heartwood decay and are in large (average 36in dbh) trees and snags. These trees are often much older than those available with Douglas fir averaging 177 years (Lofroth et al. 2010).

Fire effects on fisher habitat

Wildfires are a natural part of California's forests and given the severity, fires can dramatically affect fisher habitat. Depending on the severity and spatial distribution of the fire and the habitat prior to the fire, the level of fire effects can vary. Low severity forest fires are considered to have a beneficial effect on fisher habitat in the long-term by building fire resiliency. Catastrophic, or stand-replacing, wildfires burn at high intensity over large areas removing forest habitat. Since fisher are dependent on dense canopy cover and late-seral forest structures for resting and denning, the loss of these important habitat components is likely to negatively affect fisher over the long-term (Powell and Zielinski 1994, Naney et al. 2012). The regeneration of forest development into large-diameter trees may require 100 or more years of growth before the trees reach the desired size.

Fishers may disperse through habitat burned at high severity, but the lack of canopy cover would make it unlikely to be used for denning or resting. Also, salvaged trees are not likely to provide cavities yet as they have been fire hardened and will not sufficiently rot within the life of this project to allow primary cavity nesters to excavate cavities large enough to accommodate fisher. Non-merchantable conifer and hardwood trees would be retained which could provide cavities for resting and denning fisher (if canopy closure is present). Although reduced by the fire, CWD would still be present through log retention Management Recommendations, and by leaving unmerchantable conifer logs and hardwood trees where they are felled. Treatments would not occur within denning/resting habitat.

Sightings

There are two known sightings within the action area by Hardy Place and Snow Basin. Detections have occurred in 1936 and 1998. No recent sightings have occurred in the action area. The project does still have suitable habitat remaining even with the high burn severity. Hanson (2015) found that fisher will use, particularly for foraging, stands that were in late-successional conditions prior to being burned.

Townsend's Big-Eared Bat (*Corynorhinus townsendii*)

Existing Condition

The Townsend's big-eared bat occurs throughout western North America, from southern British Columbia to central Mexico and east into the Great Plains, with isolated populations occurring in the south and southeastern United States (Pierson and Rainey 1998;; NatureServe 2013). In California, the range is nearly state-wide, including all the National Forests within Region 5, except the highest peaks of the Sierra Nevada Mountains (CWHR 2008).

Historically, the Townsend's big-eared bat was found throughout California as a scarce, but widespread species (Barbour and Davis 1969). It ranges from sea level to 3,300 meters in elevation in a wide range of vegetation types (Barbour and Davis 1969; Philpott 1997; CWHR 2008). Its distribution is strongly correlated to geomorphic features such as natural and man-made caves, buildings, and bridges (Pierson et al. 1999; Ellison et al. 2003a and 2003b; Sherwin et al. 2003; Gruver and Keinath 2006). Caves and mine tunnels typically are used as hibernacula by both sexes (Piaggio 2005). These, along with old buildings, bridges, and large trees may be used as roost sites (Piaggio 2005).

Habitat

This bat is associated with a wide range of vegetative types, including forests, desert scrub, pinyon-juniper woodlands, and agricultural development (Gruver and Keinath 2006; Kunz and Martin 1982; Piaggio 2005; CWHR 2008). Roost structure is believed to be more important than the local vegetation (Gruver and Keinath, 2006; Pierson and Rainey 1998) and the presence of suitable

caves or cave-like structures defines the distribution of this species more so than does suitable foraging habitat (Barbour and Davis 1969; Pierson and Rainey 1998; Piaggio 2005; Gruver and Keinath, 2006). In California, this bat is known to use lava tubes, man-made structures, some limestone caves (Kunz and Martin 1982), and large trees (Piaggio 2005).

Wildlife habitat associations in California are broad. These bats are often associated with forest edges, open forests, shrub and scrub habitats, grasslands, and riparian areas (CWHR 2008; or drier habitats where there is free water (Geluso 1978). Free water is an important habitat feature for this bat as it has a relatively poor urine-concentrating ability; it can meet some of its water needs metabolically (Geluso 1978). They will use cave, mines and abandon buildings for maternity roosts and hibernacula, and have been known to use abandon bridges and large tree cavities for day and night roosts. This species does not roost in crevices but rather on exposed surfaces, often close to the entrance of the cave making them extremely vulnerable to disturbance. Colonies use multiple roosts, shifting as the season progresses and temperatures change.

In colder parts of California, the bats seek hibernacula conditions for prolonged torpor. Roost temperatures are often just above freezing, and the relative humidity is high (84-94%) to reduce moisture loss (Humphrey and Kunz 1976). In areas with more moderate climate, the species arouses from torpor frequently to feed (Pierson et al. 1999). They may change roost sites frequently. They tend to roost in small groups in sites with temperatures below 10 degrees C, strong airflow and lower relative humidity. Disturbance at hibernacula can cause the colony to arouse, impacting their energy reserves to the point where they may not survive the winter (Pierson et al. 1999).

This species is insectivorous, with 95% of diet consisting of Lepidoptera (moths). They are sensitive to timber harvest and salvage operations, which reduces habitat for prey. They are late flyers, emerging only after full darkness.

Sightings

Within the Black Butte watershed and the project area there are multiple rock outcrops and features that may be used by Townsend's big-eared bats. The tributaries and Black Butte River corridor itself also contains significant rock outcrops and large boulders in the river that could provide roosting habitat. Potential for species to occur in project area.

Fringed Myotis (*Myotis thysanodes*)

Existing Conditions

The fringed myotis is found in western North America from south-central British Columbia to central Mexico and to the western Great Plains (Natureserve 2013). In California, it is distributed statewide except the Central Valley and the Colorado and Mojave Deserts (CWHR 2008).

The fringed myotis is rare across its range but may be quite common locally from sea level to 1,950m (6,400ft). It occurs in a wide range of habitats from desert scrub to high elevation coniferous forests (Pierson & Rainey, 1998). It uses open habitats, early successional stages, streams, lakes and ponds as foraging areas. They roost in snags, caves, mines, crevices and man-made structures (Zeiner et al. 1990). Maternity and overwintering roosts have been most commonly reported in caves, buildings and mines. However, tree roosting has been observed in heavily forested environments in the northern part of the range (Pierson & Rainey, 1998).

Habitat

The fringed myotis uses caves, crevices, mines, and buildings for roosting, hibernacula, and maternity colonies (Keinath 2005; CWHR 2008). They day and night roost under bark and in tree hollows, and in northern California they day roost in snags. Medium to large diameter snags are important day and night roosting sites (Weller and Zabel 2001). There is increased likelihood of occurrence of this species as snags greater than 30 cm in diameter increases and percent canopy cover decreases. Large snags and low canopy cover, typical of mature, forest habitat types, offer warm roost sites. Decay classes preferred were two to four in ponderosa pine, Douglas-fir, and sugar pine (Keinath 2005).

In California, this species is found from 1300 to 2200 meters in elevation in pinyon-juniper, valley foothill hardwood and hardwood-conifers (CWHR 2008). Like other tree-roosting *Myotis* species, the fringed myotis switches roosts less than every two days on average (Weller & Zabel, 2001) and requires a large number of suitable roost sites in an occupied area. Roost choice appears to vary throughout the range of the fringed myotis with snags exhibiting greater importance in California, New Mexico and Arizona and a heavy reliance on rock crevices in South Dakota, Oregon and Washington (Lacki & Baker, 2007). Weller & Zabel (2001) found that fringed myotis prefer large (>30cm dbh) snags in decay class 2 or 3 that are the tallest in the stand and have reduced canopy cover (necessary for thermoregulation). This is consistent with the few snags reported by Lacki & Baker (2007) who also found that female the fringed myotis in arid climates used rock crevices that were 1-4cm wide and located in non-forested areas. It is unclear if the fringed myotis actually prefers rock crevices in these areas or if there is a deficient amount of quality snags. There are several features within the HUC 10 Black Butte watershed and within the WSR corridor that may provide suitable cave structure for fringed myotis roost, hibernacula, and maternity colonies.

Sightings

There are no detections of this species in the project action area. The nearest detection has occurred 2.5 miles from the project action area along Grindstone Creek off forest route 23N02. Potential for species to occur in project area.

Pallid Bat (*Antrozous pallidus*)

Existing Conditions

Pallid bats are common in desert habitat, but they may also be found in oak and pine forests or open farmland (Weber 2009) but in some areas in California they may be using mixed conifer and evergreen habitats. Bats in California use day or night roosts that may be live trees or snags, rock crevices or buildings with day and night roost sites alternating (Baker et al. 2008).

Pallid bats are gleaners and forage close to the ground (Baker et al. 2008). They prey on large flying and ground-dwelling insects, including beetles, crickets, katydids and grasshoppers, cicadas, moths, spiders, scorpions, and centipedes. Occasionally they will take small lizards and mice (Weber 2009).

Habitat

Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of coast redwoods and giant sequoias, bole cavities of oaks, exfoliating Ponderosa pine and valley oak bark, deciduous trees in riparian areas, and fruit trees in orchards), and various human structures such as bridges (especially wooden and concrete girder designs), barns, porches, bat boxes, and human-occupied as well as vacant buildings (Sherwin & Rambaldini, 2005). Cavities in broken branches of black oak are very important and there is a strong association with black oak for roosting (Klamath National Forest 2002). Roosting sites are usually selected near the entrance to the roost in twilight rather than total darkness. The site must protect bats from high temperatures, as this species is intolerant of roosts in excess of 104 degrees Fahrenheit. Pallid bats are also very sensitive to roost site disturbance (Zeiner et al. 1990; Philpott 1997). Night roosts are usually more open sites and may include trees or snags, open buildings, porches, mines, caves, and under bridges (Philpott 1997; Klamath National Forest 2002; Pierson 1996).

Sightings

There are no detections of this species in the project area. The nearest detections have occurred near Stony Creek along County Road 42 in 2005 and 20013. Potential for species to occur in project area.

Foothill Yellow-Legged Frog (*Rana boylei*)

Existing Conditions

The foothill yellow-legged frog is found in most of northern California west of the Cascade Mountains crest, in the Coast Ranges from the California-Oregon border south to the Transverse Mountains in Los Angeles County and along the western slope of the Sierra Nevada Mountains south to Kern County.

Isolated populations have been reported from the San Joaquin Valley and the mountains in Los Angeles County. This frog can be found from near sea level to 1940m (6370 ft) where habitat is suitable (Morey 2000).

The foothill-yellowed was added to the California Endangered Species Act in 2017 but remains a Forest Service Sensitive Species.

Habitat

Foothill yellow-legged frogs are found in partially shaded rocky streams in a variety of habitats including: valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral and wet meadows and appear to be highly dependent on free water for all life stages (Morey 1990).

They can live in perennial streams below 6,000 feet in elevation, although more typically below 3,500 feet in elevation. The foothill yellow-legged frog (FYLF) was common in the Sierra Nevada historically; thus, almost every Sierran creek below 6,000 feet elevation has the potential to be inhabited by this species.

Sightings

The Black Butte River is known suitable reproductive habitat for the foothill yellow-legged frog. Various life stages including tadpoles have been observed in recent surveys. There are no known FYLF sightings within the project action area. With known various life stages in Black Butte River, there is potential for frogs to utilize tributaries that are located in the Plaskett-Keller action area.

Western Pond Turtle (*Actinemys marmorata*)

Existing Conditions

The western pond turtle (*Actinemys marmorata*) is found on the west coast of North America. Disjunct populations have been documented in the Truckee, Humboldt and Carson Rivers in Nevada, Puget Sound in Washington, and the Columbia Gorge on the border of Oregon and Washington (Lovich and Meyer 2002). Modern distribution is limited to parts of Washington, Oregon, California and northern Baja California (Buskirk 2002).

Habitat

The western pond turtle inhabits a Mediterranean climate defined by mild, wet winters and long hot, dry summers. In the northern portion of its range winters are colder with more rainfall than in southern areas (Germano and Rathbun 2008). Aquatic habitats include lakes, natural ponds, rivers, oxbows, permanent streams, ephemeral streams, marshes, freshwater and brackish estuaries and vernal pools. Additionally, these turtles will also utilize man-made waterways (Buskirk 2002).

Perennial water is preferred, but there is an indication that the turtle can persist in environments where water is seasonally available by means of a process referred to as aestivation (Holland 1994; Rathbun et al. 2002). Turtles frequently move quite a bit, often between 100 to 700 feet per day. However, individual turtles typically stay within a several hundred foot reach. They may utilize upland habitat extending as far as 1,700 feet away from water as stream-dwelling individuals will occasionally move away from flood-prone creeks during the rainy season (Reese et al. 1997). Turtles favor areas with offshore basking sites including floating logs, snags, protruding rocks, emergent vegetation and overhanging tree boughs, but also will utilize steep and/or vegetated shores. Hatchlings additionally require shallow, eutrophic, warm areas which are typically at the margins of natural waterways (Buskirk 2002). Turtles have been documented to overwinter under litter or buried in soil in areas with dense understories consisting of vegetation such as blackberry, poison oak, and stinging nettle which reduces the likelihood of predation (Davis 1998).

Sightings

Most recently western pond turtles have been detected along Black Butte River (near Cold Creek) and Butte Creek. Sightings occurred in 2019 and 2021. With pond turtles known to be in the Black Butte River HUC 10 watershed and the action area, there is potential for individuals to be present near treatment units.

V. EFFECTS OF THE PROPOSED ACTION

Alternative 1 – Initial Proposed Action

Direct and Indirect Effects

These proposed actions effects would be similar to alternative 3. Alternative is a modified version of alternative 1, with only minor differences that do not change the biological analysis. Alternative 3 was developed in response to public comments from the 30 day comment period. Alternative 3 would have less of a negative impact to snag dependent species as less trees would be removed due to a higher probability mortality of trees removed.

Effects of No Action (Alternative 2)

Direct and Indirect Effects

Taking no action in the short term would result in no direct effects to listed, proposed, or sensitive species or habitats pertaining to these species. No potential human-caused disturbance would result due to a lack of proposed management such as those described for the action alternatives.

Indirectly, the no-action alternative would maintain habitats in existing conditions and trends. There would be no immediate change in snag density or recruitment of large snags. In addition, current conditions would remain, and no habitat restoration would occur. However, without

treatment and in the long term, fuels levels would increase due to fire killed trees falling, resulting in larger re-burn potential, and non-native invasive plant species would continue to reduce diversity, thus suitable habitat, within the project area. The fuels report prepared for this project indicates that risk of high fire severity would increase in ten years post-fire for much of the fire area and that project activities are likely to reduce the size and impact of future reburns in the project area, thus allowing the forests time to regrow.

Alternative 3 – Modified Proposed Action

The project effects description covers both direct and indirect effects as described in the Endangered Species Act. Direct effects are those effects that are caused by or result from proposed activities and take place at the time of implementation. Generally, these effects are a result of project implementation acting directly in suitable habitat where individuals may reside. Effects that are likely to adversely affect a listed species are not discountable, insignificant or wholly beneficial. A discountable effect would be determined to be extremely unlikely to occur and would be based on professional judgment and best available scientific information. Insignificant effects relate to the size of the impact and the effects would not be expected to reach the scale where take occurs. Using the best available data and professional judgment, a person would not be able to meaningfully measure, detect or evaluate insignificant effects.

Indirect effects are those effects that are caused by or will result from proposed activities and take place later in time but are reasonably certain to occur. Generally, these are effects on resources that act indirectly on the listed species such as when changes to vegetation modify the abundance or availability of prey.

Table 51. Comparison of alternatives and their effects for wildlife species.

Proposed Action	No Action	Modified Proposed Action	Notes
There is potential for direct and indirect impacts to one Threatened wildlife species. Proposed treatments would occur adjacent to and within suitable Northern Spotted Owl (NSO) habitat. Removal of trees with less than 70-100% probability of mortality in treatment units with suitable habitat would result in an adverse effect via removal or downgrade of habitat. By definition, any removal or downgrade of suitable habitat is considered an adverse effect. However, no take of any owl is expected. As such a minimal number of trees potentially would be removed from suitable habitat, the removal would not be detrimental in comparison to	<p>Taking no action in the short term would result in no direct effects to listed, proposed, or sensitive species or habitats pertaining to these species. No potential human-caused disturbance would result due to a lack of proposed management.</p> <p>The no-action alternative would maintain current habitats in existing conditions and trends. There would be no immediate change in snag density or recruitment of large</p>	<p>The effects of Alternative 3 are the same as Alternative 1 for wildlife since the amount of suitable habitat to be modified or removed would be the same for the Northern Spotted Owl and its critical habitat. There may be lesser negative indirect impacts to sensitive species including marten, fisher, wolverine, bat species and goshawks since fewer trees would be removed.</p>	For Forest Sensitive wildlife species and their habitat impacted, a determination of a “May affect, but is not likely to result in a trend toward Federal listing or loss of viability.”

<p>remaining habitat across the forest landscape. 1.22 acres of suitable habitat would be potentially removed/ downgraded, which is 0.1% of suitable habitat in the action area. Design criteria and limited operating periods for nesting/ roosting and active Activity Centers would ensure that no breeding or nesting disturbance would occur.</p> <p>Physiological and biological features (PBFs) of critical habitat fall into multiple treatment units. However, PBFs will not be removed or downgraded since only trees with 70-100% probability of mortality would be removed in those units. Treatment of trees could occur directly adjacent to PBFs resulting in a modification of surrounding areas. Any owls utilizing PBFs would likely migrate through and use burned landscape adjacent to PBFs. PBFs would not be removed, however modification of habitat could occur depending on removal of hazard trees in close proximity. Therefore, the proposed action “may affect, but not adversely affect” designated NSO critical habitat.</p>	<p>snags. In addition, current conditions would remain, no habitat disturbance would occur, and non-native invasive plant species would continue to reduce diversity, thus reducing the quantity of suitable habitat. However, without treatment and in the long term, fuels levels would increase due to fire-killed trees falling, resulting in larger re-burn potential. This may cause removal and downgrading or loss of suitable habitat.</p>		
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Northern Spotted Owl

Effects of the Action Alternative

The project effects description covers both direct and indirect effects as described in the Endangered Species Act. Direct effects are those effects that are caused by or result from proposed activities and take place at the time of implementation. Generally, these effects are a result of project implementation acting directly in suitable habitat where individuals may reside. Effects that are likely to adversely affect a listed species are not discountable, insignificant or wholly beneficial. A discountable effect would be determined to be extremely unlikely to occur and would be based on professional judgment and best available scientific information. Insignificant effects relate to the size of the impact and the effects would not be expected to reach the scale where take

occurs. Using the best available data and professional judgment, a person would not be able to meaningfully measure, detect or evaluate insignificant effects.

Indirect effects are those effects that are caused by or will result from proposed activities and take place later in time but are reasonably certain to occur. Generally, these are effects on resources that act indirectly on the listed species such as when changes to vegetation modify the abundance or availability of prey.

Direct and Indirect Effects

The project treatments will affect 6% of the high severity fire areas of the previously suitable N/R habitat, 14% of the high severity fire areas of the previously suitable foraging habitat and 11 % of the high severity fire area of the previously dispersal habitat within the AA. There is a total of 17,091 acres high burn severity acres within the project action area. The project will treat 12% of the total acres of high severity burned areas within the AA.

The project area will not remove or downgrade any of currently suitable N/R habitat. A total of **0.8** acres of currently suitable F habitat, and **0.42** acres of currently dispersal could be removed . The project will remove 0% of currently suitable N/R habitat, 0.03% of currently suitable F, and 0.02% of currently suitable D habitat in the action area. A total of **233** acres of Post Fire Foraging would be removed by commercial, roadside salvage and fuels treatments. The project is modifying and removing a small amount of suitable F and D habitat. The project will be modifying **4** acres of MEN0019 nest grove. Due to the amount of suitable habitat removed from the August Complex fire, there is limited suitable NSO habitat left on the forest; therefore, removal of any suitable habitat, modifications to nest groves, and PFF is defined as an adverse effect, however, such a minimal habitat being affected impacts are not expected to significant to habitat.

Due to an adverse effect determination, an incidental take statement is expected to be issued from the FWS. There is potential for take where removal of suitable habitat would occur at Plaskett Meadow Campground. However, it is very unlikely owls would be nesting, roosting or perched in this area due to lack of optimal nesting habitat in the campground and the general noise disturbance from recreation. Direct injury or take from habitat removal is not realistically expected to occur.

Suitable Habitat

The Plaskett-Keller August Complex Phase 1 Project will treat approximately 944 acres of commercial, ground-based timber harvest of fire-killed trees (defined with different mortality probabilities based on units) and 1,220 acres of roadside commercial and fuels treatment of hazard trees. Hazard tree removal would be defined by 50 to 100% mortality classes in accordance with the #RO-11-01 for “Marking Guidelines for Fire-Injured Trees in California” (Smith and Cluck 2011). For analysis purposes for the effects of NSO, a 200ft roadside buffer (400 feet maximum totaling 1,220 acres) was used.

Commercial treatments and roadside salvages actions will be followed by hazardous fuels reduction treatments. Fuels treatments would include mechanical thinning, piling, handing, understory burning and pile burning. These activities would be performed within salvage and roadside hazard units and will help alleviate fuels buildup from any logging slash. Fuel accumulation should be reduced to no more than 10 tons/acre by removing merchantable timber

and biomass and by burning slash piles. Fuels treatments are designed to further protect resource values by contributing to fire resiliency for adjacent remaining habitat within the Action Area. Fuels reduction treatments will reduce fuel loading, that if left on the landscape, could result in future high-severity fire which may damage post-fire recovery efforts in an already fire damaged municipal watershed.

There are seventeen ACs impacted by the project with commercial and roadside salvage and fuels treatment occurring in nine. The lowest impacted AC was Kill Dry with a total of 8.39 acres in the home range impacted. That impact to Kill Dry is on the very outrange of the 1.3 mile territory with only 1.8% of high severity burn area treated which is a very insignificant impact. The highest impacted ACs are Pinto Creek, Keller Lake and Butte Creek with the most treated acres. However, Keller Lake and Butte Creek Activity Centers almost completely overlap with one another, indicating some treatments would affect both ACs simultaneously. However, all three of these ACs have the most habitat loss from the fire. Nesting and roosting habitat has greatly diminished, and new nest are not expected to occur in these ACs. The highest percentage of burned area treated in any of the seventeen affected ACs 1.3 mile home range is 75% (Keller Lake AC – Table 56). This is the percent to be treated, it does not mean 75% of the habitat would be removed here. Suitable habitat in this Keller Lake AC would not be removed or downgraded as on 100% probability mortality trees would be targeted for units overlapping.

This will leave a minimum of 25% of the high severity burned area untreated in the Keller Lake AC 0.7 mile core area, in addition to the acres of untreated very low, low, and moderate intensity burned areas and untreated currently suitable N/R (NSO will also foraging in N/R habitat) and foraging habitat .

The areas to be treated will be a varied basal mortality based on units and scale of hazards to public safety. Clark (2007), Comfort (2013), and Eyes (2014) found that spotted owls foraging predominantly in low severity burned areas, which are not being treated. However, if NSO use high severity burned areas, potential foraging function will be maintained in all treatment areas by the retention of NSO hunting perches and prey species habitat. Post Fire Foraging (PFF)habitat in areas within 500ft of suitable Nest/Roost/Foraging fall into commercial and roadside salvage units. PFF impacts are described in the section below.

Salvage operations in general will remove fire damaged firs, but will look retain all pine and hardwoods in the stand unless they pose a safety hazard to operators. Table 56 below displays the acres of NRF habitat affected by the proposed activities and the change in quantity or quality of the habitat affected of suitable habitat.

Post Fire foraging habitat

While not currently meeting the definition of foraging habitat, as stated above spotted owls have been found to use burned areas for foraging. Research has found that spotted owls may use high severity areas for foraging. To maintain potential NSO foraging options in these burned areas, a minimum of 4 snags and 4 logs per acre will be maintained (LRMP 1995). In addition to any green tree or trees with any green still on them, the trees/snags to be maintained are fire-killed predominant trees, fire-killed trees with deformities, and pre-fire snags that don't cause a safety hazard. Existing pre-fire logs and cull (unmerchantable portions) logs will also be left on site. It is expected that the number of trees/snags and logs left will exceed 4 snags and 4 logs per acre. NSO

are “perch and pounce” predators and the leave trees will provide adequate perches from which to hunt.

No currently suitable (green and unburned) N/R habitat is being treated (as only dead trees or dying trees are being taken); however, NSO have been known to forage in burned areas adjacent to any remaining green areas. Some foraging habitat is proposed to be treated in units where less than 100% basal mortality is to occur in units where hazard trees presents a safety issue to the public. In areas where sufficient NRF habitat is not available, NSO have been known to venture into moderate to high burn severities to forage.

In the studies listed above, NSO are likely to forage in these burned areas closer to NRF than they are to forage in burned habitat further away from NRF. Therefore, in order to incorporate the information described above on NSO use of edge habitat in post fire landscapes, the edge effect foraging habitat was further refined. Using GIS a 500 foot buffer was applied to areas that are currently suitable NRF (greater than 5 acres). Within that 500 foot buffer, any previous NRF habitat that burned moderate to high severity was identified as the edge foraging habitat. We estimated the most likely maximum distance NSO would forage from the edge of suitable NRF (Low fire severity or no fire effects) into suitable burned habitat burned at moderate or high severity to be approximately 500ft. This distance was derived from a combination of reviews of recent literature on the use of edge habitat as described above and consultation with level 1 USFWS biologists. Fire created edge foraging (PFF) habitat overlaps with both commercial salvage and roadside salvage units.

*In the action area, a total of **5,186** acres of PFF occur. Of that 5,186 acres of PFF, **233** acres is proposed to be treated with **109** acres within roadside and **124** acres within commercial salvage units.* This former habitat (Post-Fire Foraging or PFF), if located near areas with remaining green NRF habitat, has been shown to be used by foraging owls. PFF does not meet the USFWS definition of unburned NRF habitat, but research demonstrates that NSO do use these areas (Comfort et al. 2016, Lee and Bond 2015, Eyes 2014, Clark et al. 2013, Comfort 2013, Irwin et al. 2012, Jones et al. 2016, Jones et al. 2020, Lee et al. 2012, Bond et al. 2009, Center for Biological Diversity et al. v. Susan Skalki and United States Forest Service [Manley Declaration] 2014). For this reason, some authors have suggested formerly suitable habitat should be considered, post fire, as suitable habitat for NSO (Bond et al. 2016).

The extent to which NSO use fire-killed snags in these areas as foraging perch sites, vs. perching in adjacent areas with good vegetative cover while seeking prey in the PFF areas, is unknown. However, it is reasonable to conclude that removing snags in PFF habitats may decrease use of these areas by foraging owls. Snags will be retained consistent with the recommendations in the Forest Wide Late Successional Reserve Assessment, Forest Plan Standards and Guidelines, and the project’s design criteria. Effects of removing snags from PFF habitat are likely to be minimal for multiple reasons. Intact post-fire suitable nesting, roosting, and foraging habitat is available for foraging opportunities and provides the majority of the foraging areas available in the analysis area and across the forest landscape.

The majority of the available PFF in the Action Area (approximately 96%) is not proposed for treatment. During field visits to the project area it was noted that areas that burned at high severity

that were bordered by areas of low severity burn typically had a transition zone of mixed fire severity that contains a mix of live and dead trees. By focusing treatments within areas devoid of live trees the “diffuse edge” areas that burned with mixed severity, and consequently have live and dead trees intermixed, are maintained. These areas of PFF with diffuse edge have been shown to be preferred by foraging owls. Removal of any trees within this PFF is defined as an adverse effect because owls have been known to forage in these areas, however, based on an abundance of PFF remaining in the action area and forest landscape impacts are not expected to be significant. Removal of PFF habitat is not expected to lead to a detrimental decline in habitat. Nesting has not known to occur in PFF based on literature, but owls have been known to forage in these areas.

Table 52. Post-Fire Foraging Habitat treatment impacts

PFF Within NSO Action Area	PFF Within Roadside/ Fuels Hazard Units fuels	PFF within commercial salvage units
5,186	109	124

Treatment of NSO suitable habitat in Activity Centers (AC)

Below are tables that have proposed treatments that overlap with ACs.

Table 53. Proposed commercial, roadside and noncommercial Treatment in Pinto Creek AC

Pinto Creek - MEN0019 #6048			
	Post-fire habitat	Proposed Commercial Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	621 (84.5 suitable habitat)	216.56 (1.68 suitable habitat)	526.3 (82.9 suitable habitat)
Nesting/Roosting	24	0	24
Foraging	13.3	0.4 (0.4 HTA)	12.9
Dispersal	47.2	1.28 (1.28 HTA)	46.02
PFF	0	0	0
Unsuitable	558.6	92.8	465.8
1.3 mile	1968.5 (357.5 suitable habitat)	519.27 (26 suitable habitat)	1,706.6 (331.5 suitable habitat)
Nesting/Roosting	29	0	29
Foraging	132	14.2 (10.5 HTA)	117.8
Dispersal	196.5	11.8 (11.8 HTA)	184.7
PFF	10.47	5.3	5.17
Unsuitable	1602.5	234.8	1367.7

All suitable NRF and dispersal habitat would be maintained and not removed. Acres impacted by Hazard Tree Abatement (HTA) would be modified and maintained, but not removed. A total of **5.3** acres of PFF would be treated.

Suitable habitat in the table only includes NRF and dispersal acres.

Table 54. Treatment in Keller Lake AC

Keller Lake - GLE0025 (#6037)

	Post-fire habitat	Proposed Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	830.8 (54.6 suitable habitat)	381.46 (11.9 suitable habitat)	620.15 (42.7 suitable habitat)
Nesting/Roosting	9.9	0.5 (0.5 HTA)	9.37
Foraging	35	10.3 (6.3 HTA)	24.7
Dispersal	9.7	1.1 (1 HTA)	8.6
PFF	22.5	6.6	15.9
Unsuitable	764.7	198.7	566
1.3 mile	2,533(86.6 suitable habitat)	771.6 (44.5 suitable habitat)	1,960.5 (245 suitable habitat)
Nesting/Roosting	24.3	1.5 (1.5 HTA)	22.8
Foraging	62.3	23.4 (8 HTA)	85.7
Dispersal	156	19.5 (18 HTA)	136.5
PFF	138.4	31	107.4
Unsuitable	2,074	389.7	1,684.3

All suitable NRF and dispersal habitat would be maintained and not removed. Acres impacted by Hazard Tree Abatement (HTA) would be modified and maintained, but not removed or downgraded. A total of **31** acres of PFF would be treated.

Table 55. Treatment in Butte Creek AC

Butte Creek - GLE0002 (#6082)			
	Post-fire habitat	Proposed Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	828.9 (52.4 suitable habitat)	140.8 (12.3 suitable habitat)	688.1 (40.1 suitable habitat)
Nesting/Roosting	7.9	0.8 (0.8 HTA)	7.14
Foraging	35	9.9 (6 HTA)	25.1
Dispersal	9.5	1.6 (1.6 HTA)	7.9
PFF	0	0	0
Unsuitable	776.5	128.5	648
1.3 mile	2,450.3 (321.8 suitable habitat)	480.8 (41 suitable habitat)	1,969.5 (280.9 suitable habitat)
Nesting/Roosting	40.4	1.5 (1.5 HTA)	38.9
Foraging	88	24.6 (9.9 HTA)	63.4
Dispersal	193.4	14.8 (14.7 HTA)	178.6
PFF	126.5	46	80.5
Unsuitable	2,002	393.9	1608.1

Only 70-100% probability mortality trees will be removed in N/R/F and dispersal; therefore all nesting/roosting, foraging habitat and dispersal habitat will be maintained. Acres impacted by Hazard Tree Abatement (HTA) would be modified and maintained, but not removed or downgraded. A total of **46** acres of PFF would be treated and potentially removed.

Table 56. Treatment in Cold Creek AC

Cold Creek - GLE0001 (#3024)

	Post-fire habitat	Proposed Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	917.1 (148 suitable acres)	0.71 (0 suitable habitat acres)	916.6 (148 suitable habitat acres)
Nesting/Roosting	29	0	29
Foraging	85	0	85
Dispersal	34	0	34
PFF	256	0	256
Unsuitable	513.1	0.71	512.6
1.3 mile	2,829.4 (723 suitable habitat acres)	315.91 (173 suitable habitat acres)	2,540.4 (842.4 suitable habitat acres)
Nesting/Roosting	21	0	21
Foraging	318	54.8 (1.54 is in unit 270, 41.2 HTA))	263.2
Dispersal	384	43.8 (31 HTA)	340.2
PFF	832	74	758
Unsuitable	1,274.4	116.4	1,158

Only 70-100% probability mortality trees will be removed in N/R/F and dispersal; therefore all nesting/roosting, foraging habitat and dispersal habitat will be maintained. A total of **74** acres of PFF habitat would be treated.

Table 57. Treatment in Shepherd Ridge AC

Shepherd Ridge - GLE0011 (#3005)			
	Post-fire habitat	Proposed Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	629.1 (327 suitable habitat acres)	36.4 (30.8 suitable habitat acres)	592.7 (296.2 suitable habitat acres)
Nesting/Roosting	40	0.06 (0.06 HTA)	39.94
Foraging	84	6.5 (6.5 HTA)	77.5
Dispersal	203	24.2 (24.2 HTA)	178.8
PFF	192.3	4.5	187.8
Unsuitable	109.8	1.1	108.7
1.3 mile	2,140 (1,047 suitable habitat acres)	74.3 (60.2 suitable habitat acres)	2,065.8 (925.8 suitable habitat acres)
Nesting/Roosting	259	0.080	258.92
Foraging	261	12.2 (HTA)	248.8
Dispersal	466	47.9 (HTA)	418.1
PFF	584	11	573
Unsuitable	570	3.12	567

Only 70-100% probability mortality trees would be removed; therefore, all suitable N/R/F and dispersal habitat will be maintained. A total of **15.5** acres of PFF habitat would be treated.

Table 58. Treatment in Kill Dry AC

Kill Dry - GLE0003 (#3006)

	Post-fire suitable habitat	Proposed Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	915.2 (456.3 suitable habitat acres)	0 (0 suitable habitat acres)	915.2 (456.3 suitable habitat acres)
Nesting/Roosting	287	0	287
Foraging	96.3	0	96.3
Dispersal	73	0	73
PFF	446.5	0	446.5
Unsuitable	12.4	0	12.4
1.3 mile	2,805.7 (1,548.1 suitable habitat acres)	8.39 (0 suitable habitat acres)	2,797.3 (1,548.1 suitable habitat acres)
Nesting/Roosting	499	0	499
Foraging	310	0	310
Dispersal	518	0	518
PFF	1314	0	1314
Unsuitable	164.7	8.39	156.3

Table 59. Treatment in South Branch Board Creek AC

South Branch Board Creek - GLE0023 (#6082)			
	Post-fire suitable habitat	Proposed Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	861.7 (195 suitable habitat acres)	0 (0 suitable habitat acres)	861.7 (195 suitable habitat acres)
Nesting/Roosting	52	0	52
Foraging	105	0	105
Dispersal	38	0	38
PFF	252	0	252
Unsuitable	414.7	0	414.7
1.3 mile	1,453.3 (203 suitable habitat acres)	58.73 (0 suitable habitat acres)	1453.29(203 suitable habitat acres)
Nesting/Roosting	63	0	63
Foraging	56	0	56
Dispersal	84	0	84
PFF	278	0	278
Unsuitable	972.3	0.01	972.29

Table 60. Treatment in Harvey Spring Ridge AC

Harvey Spring Ridge - GLE0004 (#3048)			
	Post-fire habitat	Proposed Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	848.7 (403 suitable habitat acres)	0 (0 suitable habitat acres)	848.7 (403 suitable habitat acres)
Nesting/Roosting	112	0	112
Foraging	238	0	238
Dispersal	53	0	53
PFF	418	0	418
Unsuitable	27.7	0	27.7
1.3 mile	2,898.4 (1,381 suitable habitat acres)	23.15 (7.57 suitable habitat acres)	2,888.7 (1,373.5 suitable habitat acres)

Nesting/Roosting	249	0	249
Foraging	794	0.37 (0.37 HTA)	793.7
Dispersal	338	7.2 (0.37 HTA)	330.8
PFF	1161	0.4	1160.6
Unsuitable	356.4	1.8	354.6

Only 70-100% probability mortality trees would be removed; therefore, all suitable N/R/F and dispersal habitat will be maintained. A total of 0.4 acres of PFF would be treated.

Table 61. Treatment in GLE0035 AC

GLE0035 (#3062)			
	Post-fire habitat	Proposed Salvage and Fuels Treatments	Post-fire untreated habitat
0.7 mile	742.4 (50 suitable habitat acres)	0 (0 suitable habitat acres)	742.4 (746.44 suitable habitat acres)
Nesting/Roosting	19	0	19
Foraging	31	0	31
Dispersal	11.50	0	11.5
PFF	29	0	29
Unsuitable	667	0	667
1.3 mile	1,998.7 (240 suitable habitat acres)	11.65 (2 suitable habitat acres)	1,986.4 (237.4 suitable habitat acres)
Nesting/Roosting	104	0	104
Foraging	94.5	0.1 (0.1 HTA)	94.4
Dispersal	8.41.5	1.9 (1.9 HTA)	39.6
PFF	221	0	221
Unsuitable	1,537.7	9.65	1,528

Only 100% mortality tree will be removed; therefore, all suitable N/R/F and dispersal habitat will be maintained.

Of the nine ACs that have proposed treatments, no ACs would have NSO suitable habitat removed. All of the ACs with proposed commercial and fuels treatments would only have trees at 70-100% probability mortality removed. A total of 3.1 acres of NR, 130 acres of foraging and 147 acres of dispersal habitat in these ACs would be treated, but not removed or downgraded. Trees removed at those probability mortalities would not remove or downgrade habitat, but modify and maintain suitable habitat. This is only a very minimal acreage over the span of all the activity centers and the entire action area. A total of **168** acres of PFF would be treated within six of the nine ACs analyzed here.

There is a total of **6,123** acres of NSO post-fire suitable habitat total in all nine of these ACs. There is 0% of potential habitat removal or downgrade.

Effects to suitable habitat outside of ACs

Because Unit 310 is treated at 50% probability of mortality, habitat will be removed. Unit 310 has **0.8** acres of foraging habitat that will be removed/ downgraded. Unit 310 has **0.42** acres of dispersal habitat will be removed.

Below is the table showing suitable habitat outside of ACs and NSO CH.

Table 62. Treatment in NSO suitable habitat outside of ACs - roadside and commercial salvage units

Treatment unit	Probability Mortality (%) to be removed	NR Acres	Foraging Acres treated	Dispersal Acres treated
33	90%	0	0.002	0.36
311	90%	0	5.4	1.3
310	50%	0	0.8	0.42
29	90%	0	0	0.35
270	90%	0	7.95	7.04
272	100%	0	0	0.13
271	90%	0	1.6	1.64
13	90%	0	9.1	0.3
Roadside	70-100%			
Total		0	24.8 (0.8 removed)	11.54 (0.42 removed)

Table 63. Treatment in NSO suitable habitat outside of ACs fuels roadside and fuels treatments

Treatment unit	Probability Mortality (%) to be removed	NR Acres	Foraging Acres treated	Dispersal Acres treated
Roadside/ fuels	70-100%	2	6	22
Total		2 (0 removed)	6 (0 removed)	22 (removed)

The proposed treatments will remove **0.8** foraging acres and **0.42** dispersal acres, a total of **1.22** acres outside of the ACs. No nesting/ roosting habitat will be removed or downgraded. There is a total of **6,674** suitable habitat acres in the 1.3 mile project action area. There is only a **0.01%** of habitat removal proposed to occur. In comparison to the action area and the large landscape of the forest, this is extremely minimal. *However, even with such a minimal acres impacted, this is still considered an adverse impact due to the potential removal of suitable habitat.*

Summary of Acres of impacts to NSO (including ACs)

Table 64. Total acres of NSO from Salvage treatments in roadside and commercial units

Habitat	Pre-Treatment Acres (Commercial Salvage)	Post-treatment Acres (Salvage)
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	Suitable habitat acres in project units	Action Area (1.3 mile buffer surrounding the project area)	Suitable habitat acres treated in project units	Action Area (1.3 mile buffer surrounding the project area)
N/R	1.9	1562	1.9 (modified)	1562
F	64	2,473	64 (0.8 removed)	2,472.2
D	44	2,440	44 (0.42 removed)	2,439.6
PFF	124	5,189	124 (removed)	4,964

For commercial roadside and salvage units and fuels treatments, a total of **0.8** acres of foraging habitat and **0.42** acres of dispersal habitat would be removed or downgraded because removal of 50-100% probability mortality of trees would occur. A total of **124** acres of PFF would be treated and removed.

Table 65. Total acres of NSO from Fuels treatments in roadside and fuels

Pre-treatment acres Roadside and Fuels Treatments			Post-treatment Roadside and Fuels Treatments	
Habitat	Suitable habitat acres in project units	Action Area (1.3 mile buffer surrounding the project area)	Suitable habitat acres treated --in project units	Action Area (1.3 mile buffer surrounding the project area)
N/R	4.7	1562	4.7 (modified)	1562
F	32	2,473	32 (modified)	2,473
D	91	2,440	91 (modified)	2,440
PFF	109	5,186	109 (removed)	5,080

For roadside salvage and fuels treatments no suitable NSO habitat would be removed or downgraded. Habitat would be modified, but maintained because all of these treatments would only remove trees from 70-100% probability mortality. A total of **109** acres of PFF would be treated and removed.

Table 66. NSO Suitable Habitat Effects from the Plaskett-Keller August Complex Phase 1 Project action area.

	N/R	F	Dispersal	PFF	Total
Acres of habitat type affected by Activities	6.6	96	135	233	470.6
Habitat Modified and Maintained	6.6	95.2	134.6	0	230
Habitat removed	0	0.8	0.42	233	240.8

Landings and Temp Roads

An estimated 2.5 miles of temporary roads may be needed, 1.5 miles of which could be new construction. Of the 2.5 miles of temporary roads, 0.5 mile of level 1 forest road would be reopened to support salvage.

Salvage operations have the potential to increase levels of vehicle traffic in the area. A subsequent increase in the amount of traffic on Forest System roads is anticipated across the project area. Higher than normal level of traffic and the associated noise has the potential to disrupt the normal behaviors of wildlife in the action area, including NSO.

A total of **1.53** acres of foraging, dispersal and PFF would be impacted by temporary roads. This is a minimal volume of acres in comparison with action area and forest landscape. No suitable habitat is expected to be removed from use of these temporary roads because only trees with 70-100% probability mortality would be removed for temporary road usage. A total of 0.33 acres of foraging and dispersal habitat would be impacted by temporary roads, however, based on the reasoning above habitat would be modified and maintained. A total of **1.2** acres of PFF would be removed from temporary roads.

Table 67. NSO Suitable Habitat impacted acres from the Plaskett-Keller August Complex Phase 1 Project Temporary roads.

Road #	N/R	F	Dispersal	PFF	Total
22N10	0	0.04	0	0.1	0.14
22N25A	0	0.2	0	1	1.2
22N26	0	0.05	0	0.02	0.07
22N54	0	0.03	0.01	0.08	0.12
Total	0	0.32	0.01	1.2	1.53

Potential landings have been identified and are estimated at 22.6 total acres within the action area. In general, for every 100 acres of treatment areas, it is estimated 4-8 acres of landing area would be required for decking. Existing landings, roadside turnouts and natural openings would be used to the extent they are safe and feasible. The majority of additional ground landings would be located within the roadbed; however, some limited expansion may be needed.

A total of one-hundred and eighteen (118) existing landings would be made available to expedite operations with no new landings expected. If new landings are required, consultation would need to occur with the district biologist to ensure no landings would occur in any NSO suitable habitat. Existing landings would be located either within, or adjacent to roadside or commercial salvage treatment units.

LOPs would also apply to use of landings and temporary roads within ¼ mile of activity centers or nesting/ roosting habitat to minimize any breeding disturbance. Any use of landings or temporary roads has the potential for noise disturbance of individual owls resulting in short-term displacement if perched nearby.

Where roads occur near or adjacent to areas used by NSO, there is also an increased chance for a vehicle to collide with an NSO (logging truck, heavy equipment transport, water tenders, personnel vehicles, etc.) likely resulting in mortality. The chance of this occurring is somewhat reduced, though not eliminated, by the generally nocturnal behavior of NSO and the typical diurnal nature of project implementation.

Snags and Down Woody Debris

The removal of dead/dying trees and down woody material through salvage harvest reduces fuel loading, and the reduction in fuel loading may promote the development of old forest habitat by reducing the risk of catastrophic wildfire. However, the effectiveness of salvage (and fuels) treatments proposed is difficult to predict and there is considerable uncertainty with how salvage logging influences future fire. However, it is known that salvage harvest reduces fuel loading over time (i.e. as snags fall, large surface fuel loadings result) and reduced surface fuel loads may reduce soil and forest regrowth damage in a re-burn and help prevent the spread of the fire into adjacent habitat (Peterson 2014).

Considering stand conditions following fire, all snag requirements would be met through retention of remaining pre-existing snags, as well as pine, non-merchantable firs, and hardwoods trees that died during or after the fire. Creation of additional snags is unlikely to be necessary. The operator would ensure that a minimum of four snags per acre (generally greater than 20" DBH), averaged over 40 acres, is retained. Averaging allows for creating large snag clumps and compensates for the areas that lack large diameter snags/trees.

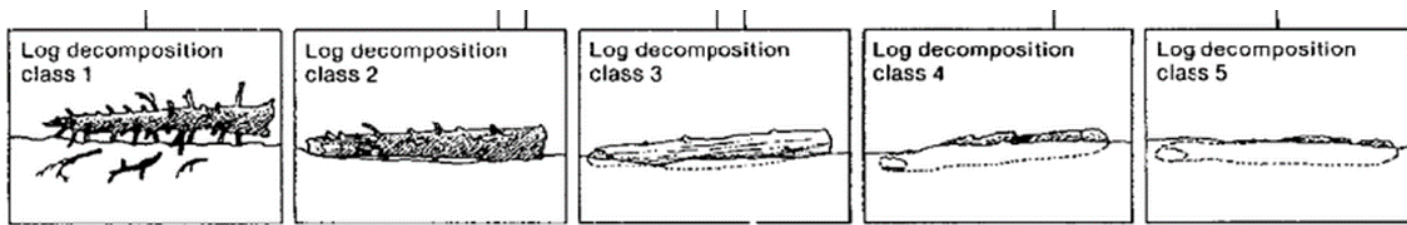
Because of such high fire severity, the area lacks organic matter and in particular coarse woody debris on the ground. The operator would retain or create one to four sound logs (decay class 1 or 2) per acre (Fig. 11). Preference would be given to logs greater than 20" in diameter at the larger end and greater than 10 feet in length. The operator would also retain all existing large rotten logs (> 20" in diameter at the large end; decay class 3, 4, and 5) unless they contribute to hazardous fuels levels. When operationally feasible, operators would follow recommendations of District/Forest hydrologist and place logs parallel with the contour.

Slash created during salvage operations would be lopped and scattered throughout the unit to contribute to surface organics, but it would not exceed 18" in height. Excess slash would be machine piled for future disposal or burning.

Large snags and large down logs are considered biological legacies in the post-fire environment and play an important role in the long term growth of the future stand (Thorn et al. 2017, Lindenmayer et al. 2008). Large snags and large down logs are also essential attributes for the development of the old forest ecosystem and associated species such as the NSO. Snags may stand for decades and in time, may become future nest trees as the regenerating forest nears maturity, although few large snags may be expected to remain intact by that time.

Snag dynamics are complex and depend on many factors (Cluck and Smith 2007). Once recruited into coarse woody debris on the ground, it serves as an important element in owl habitat as part of many aspects in the life cycles of NSO prey (Verner et al. 1992). Thus, decaying wood serves different functional roles overtime, first providing cover for spotted owl prey in the complex early seral stage of the forest, and ultimately decaying and playing a critical role in soil development of older forests. Downed logs can enhance biodiversity by providing resources for a variety of taxonomic groups, but particularly for saproxylic species important to the development of NSO habitat (Thorn et al. 2017). Conducting salvage harvest in only portions of a wildfire, while retaining areas of burned forest for sources of snags and downed logs provides a benefit to the overall diversity of species in burned areas, particularly saproxylic invertebrates and fungi dependent on dead and downed wood and crucial to the restoration of older forest conditions and NSO habitat (Thorn et al. 2017).

Figure 12. Five-class log decay classification system adapted from Maser et al. (1979).



Disturbance

No treatments will occur within $\frac{1}{4}$ miles of Nesting/ Roosting Habitat or within $\frac{1}{4}$ of valid ACs until either the 2-year protocol level surveys are completed or after LOPs of February 1 thru July 31 to account for any potential breeding NSO. Where hazard tree removal occurs within an AC, a LOP of February 1 and July 31 will occur, or if surveys determine no occupancy the LOP could be lifted sooner. There are ten known units within a $\frac{1}{4}$ mile of suitable Nest Roost habitat and no actions will occur in this unit between February 1 and July 31.

Surveys are intended to reduce the possibility of direct harm and/or disturbance that could result from implementing project activities (i.e. felling trees, removing understory fuels) within an area occupied by NSO during the reproductive period when owls are less mobile and therefore less capable of moving away from a source of disturbance. Seasonal restrictions will be in place, ensuring that implementation will occur outside the reproductive period, or NSO surveys will be completed prior to project actions that occur within NSO suitable habitat or within 0.25 mile of suitable nesting/roosting habitat. If the survey results conclude that no owls are nesting, then the seasonal restriction may be lifted within the area surveyed. If surveys determine that nesting is occurring, then project implementation will not occur until after the nesting period. Surveys will follow the 2012 revised Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls or as agreed upon with U.S. Fish and Wildlife Service.

NSO Prey Effects

Wild-fire consume, alter, and create snags and dead trees used by spotted owls nesting and coarse woody debris used by spotted owl prey for foraging (USDI 2014). No commercial or roadside salvage is proposed in optimal foraging habitat, further downgrade of prey habitat is not expected. Fire also increases the abundance of shrub-like vegetation used by ground dwelling prey such as woodrats, mice, voles and other rodent species. Edge ecotones created from fire can be areas of utilization for ground dwelling prey for foraging owls (Zabel 1995). Research from Sakai and Noon suggests these fire edges created from wildfire could be optimal habitat for woodrats (Sakai and Noon 1997), which are more likely to occur at high densities in areas with a mix of early seral conifer stands and late-successional forest habitat (Sakai and Noon 1993).

Spotted owls prey upon a variety of small mammals, birds, reptiles, and insects, however, small mammals make up the bulk of their diet (Courtney et al. 2004). On the Mendocino, an analysis of collected pellets in past years have determined that dusky-footed woodrats were the most common

prey. Prey species have varying dietary requirements, which are provided by one or a combination of seral stages and vegetation types.

In general, salvaging trees removes potential for some woody debris that may have become habitat for prey species in the future as the stand canopy develops as above overstory is more readily available. In areas where salvage and roadside hazard tree removal is occurring, these areas will have reduced quality of habitat for prey species that rely on abundant large downed wood. However, snag and CWD retention and remaining riparian reserves will contribute to an overall mosaic of areas with variable amounts of large woody debris, such that some areas will contain more large woody debris for use by NSO prey than others. Across the forest landscape outside of the action area, there is an abundance of remaining snags and woody debris that would not be removed providing for more than sufficient woody foraging habitat. The proposed project treatments have the potential to have localized effects to prey species in the action area via removal of large woody debris resulting in a loss of connectivity and cover once provided. Salvage harvest targets standing fire-killed Douglas-fir trees which would have provided future potential large woody debris, though areas outside the salvage harvest areas will have abundant large woody debris. Areas that sustained high severity fire provide more open conditions which can help accelerate the development of the brush and hardwood understory and thus provide better forage and cover for prey species. Shrubs will quickly re-sprout (likely the following spring) providing forage and habitat. Rodents and shrews, which are sources of prey for spotted owls, do well in many different successional stages as long as cover is present. With the retention of the mature overstory, snags, logs, and hardwoods, the prey base can reach or exceed levels of diversity and abundance found in many old-growth stands (Courtney et al. 2004). A portion of their habitat would be altered and they would experience short-term displacement, however, they should be able to re-colonize soon after treatments are complete and would still be available as spotted owl prey. During burning, a minimum of one slash pile per acre, created from treatments, would be retained and protected.

Species richness and diversity of forest floor small mammals was found to be equivalent or higher in treated timber stands than in untreated stands (Sullivan et al 1999, Sullivan et al 2000, Sullivan et al 2001, Suzuki and Hayes 2003). In one study, thinning did not have substantial detrimental effects on the small forest-floor mammals and had positive effects on several (Suzuki and Hayes 2003). In another study, it was shown that, although the composition of species was altered, abundance of most species was the same or higher in treated stands (Sullivan et al. 1999). Some prey species (such as flying squirrels and voles) tend to be more abundant in older forest stands, while other prey species (such as woodrats and mice) have higher densities in young or mid staged stands (Courtney et al. 2004). A landscape that provides a mixture of habitat types, which in turn, provides a diverse selection of prey species, may better support spotted owls, especially during times of single prey species population fluctuations.

Although nesting birds may be disturbed, they comprise only 6% or less of the spotted owl's diet (Forsman et al., 1984, Courtney et al. 2004). Reproduction from one clutch may be lost if eggs

were present or young were unable to escape. Adult birds would not be harmed. These effects would be limited to a single nesting effort within the year of treatment. Birds could potentially re-nest during the same season outside of treatment area. Well over half of the units have an LOP until July 10 which would reduce the risk of nesting loss due to the waning of the reproductive period. Overall probability of successful reproduction for single pairs could be slightly reduced during the year the Units are treated, however, adult bird populations would not be affected. This same habitat would be available to nesting birds the following reproductive season/nesting effort. Snags with cavities would be protected, although a small number of them may inadvertently burn. This may affect individual nesting pairs at a small scale, but would not affect the population as a whole.

Fuels hazard fuels reductions are designed to reduce small-diameter surface and ladder fuels. Burn prescriptions are designed to reduce duff build up and small ground fuels while minimizing the consumption of soil cover and coarse woody debris. Fuels are reduced to minimize the risk of wildfire while retaining adequate amounts to provide for soils and wildlife. Burning during spring months produces cooler fire with slower rates of spread and lower flame lengths, promoting a mosaic consumption of fuels. Reducing the fire's rate of spread and intensity would give prey adequate time to seek refuge in burrows, under logs, or outside the burn area.

Temporary displacement or den/nest loss, for prey species has the potential to occur within the treatment units. If displacement occurs, these species would still be available as prey for the spotted owl. The potential for adult direct mortality from incineration or asphyxiation during fuels reduction projects is considered to be low (USDA 2006). While fire-caused mortality may occur for some rodent species, their high reproductive potential enables them to increase rapidly. For example, woodrats are prolific, breeding 1-5 times a year, with an average litter size of 3-3.5 (Zeiner et al 1990). Although some snags or coarse woody debris may inadvertently be lost, adequate numbers would be protected to provide for prey species after treatment. A mosaic burn pattern will maintain some woody materials that will also continue to provide cover.

Although snags could be felled as hazard trees, more than enough would be left on site where they can still be utilized by prey species for denning and foraging. Other road maintenance activities would not reduce or disturb prey species habitat.

There could be some short-term negative effects to prey. Protection of large woody debris and snags, retention of at least one slash pile per acre, and the abundant of suitable undisturbed habitat adjacent to the Project area would temper the effects to prey species. They would be able to immigrate and continue to be available to spotted owls as prey. Most mammal prey species would be able to remain on site in their burrows/dens and those that are displaced would be able to re-colonize soon after treatment. Some birds may lose one nesting attempt during thinning. The effects of this are uncertain, however, this alteration to the prey base may cause spotted owls to alter their foraging patterns within their home range. Long-term beneficial effects would be the

reduction of hazardous fuels conditions, the risk for stand replacing fires, and the improvement of habitat

Summary of Effects

Continued management in the project area should not affect population levels for the spotted owl across its range. This Black Butte River Watershed would continue to provide late successional habitat after implementation of this project since any remaining late successional habitat would not be treated from the proposed salvage and fuels treatments.

Although a total of **2,164** commercial salvage, roadside salvage and fuels acres would be treated, only **1.22** acres of foraging and dispersal on Matrix lands would be removed. These acres occur in a small patch in the action area located at Plaskett Meadow Campground area. A total of **354** acres of suitable habitat would be treated in activity centers (including home ranges), however, none of these acres would be removed or downgraded. All **354** acres treated fall into units only 70-100% probability mortality trees removed, resulting in habitat modification, but still maintained. The effects of noise disturbance, smoke and disturbance in general in all projects would be reduced or negated through LOP's. However, removal of suitable habitat, even being so minimal, is an adverse effect by definition. A total of **4** acres of the MEN0019 activity center nest grove would be treated from proposed treatments, but these 4 acres would not be removed due to only 70-100% probability mortality trees being targeted. Modification of nest groves also contribute to an adverse effect, because it is a minor impact to high quality nesting habitat. Even with an adverse effect, removal of such minimal habitat would not be detrimental to long-term loss of suitable habitat, high quality nesting habitat and prey habitat across the action area and forest landscape.

A total of **233** acres of post fire foraging habitat would be treated and removed also contributing to the determination of a "*may affect and likely to adversely affect*" the northern spotted owl. An adverse effect determination was made, however, the project is not realistically expected to be detrimental to NSO as late seral habitat and remaining high quality nesting habitat would not be removed. Based on design criteria and mitigations in place to reduce all potential impacts, incidental take of any owl individuals is not expected.

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Table 68. Total Acres treated (suitable and non-suitable habitat) by NSO territory and suitable habitat not treated in the Action Area.

AC Name	Post-fire, untreated N/R and F habitat within the NSO territories				Total Acres Treated within 0.7 miles	Acres of high severity (75% or higher) burn treated within 0.7	Acres of high severity burn within 0.7 mi	% high severity acres treated within 0.7 mi	Total Acres Treated within 1.3 miles	Acres of high severity burn treated within 1.3 miles	Acres of high severity burn within 1.3 mi	% high severity burn treated within 1.3 miles
	N/R habitat within 0.7 miles of AC	F habitat within 0.7 miles of AC	N/R habitat within 1.3 miles of AC	F habitat within 1.3 miles of AC								
Pinto Creek - 6048	24	12.9	29	118	216.5	196.4	790	25%	519.27	417.9	2,578	16%
Keller Lake - 6037	9.37	36.2	11.6	127.8	381.46	312.7	820	38%	777.61	612.3	820.3	75%
Butte Creek - 6082	6.6	39.4	13.9	107.4	246	187.5	801.6	23%	756.13	616.1	2666.6	23%
Cold Creek - 3024	6.1	94	25.6	474.2	0.71	0.51	82	0.6%	315.91	157.4	1558.5	10%
Shepherd Ridge - 3005	113	76.5	255	255	69.7	4.2	220.5	2%	165.59	12.6	1041.5	1.2%
Kill Dry - 3006	287	96.3	499	310	0	0	8.8	0%	8.39	2.5	135	1.8%

East Kill Dry - 3007	0	0	2.5	100	0	0	0	0%	0	0	229.7	0%
Brushy Mountai n -3025	0	0	0	0.9	0	0	31.5	0%	0	0	348.5	0%
Barb Ridge - 3034	87	54.6	196	32.3	0	0	0	0%	0	0	83.8	0%
Mcoy Ridge - 6057	0	0	0	0	0	0	0	0%	0	0	109.6	0%
O' Neil Creek - 6085	0.3	7.4	0	12.5	0	0	152.6	0%	0	0	1039.7	0%
Harvey Spring Ridge - 3048	112	238	249	794	0	0	32	0%	23.15	1.92	358	0.5%
South Branch Board Creek - 3009	52	105	63	56	0	0	578.8	0%	58.73	30.9	1556.9	1.9%

Billy Pike Ridge - 6056	0	0	58	7	0	0	0	0%	0	0	289.8	0%
Shepherd Ridge - 3008	0	7.1	35	5.7	0	0	0	0%	0	0	10.6	0%
Board Creek - 1049	0	0	56	3.5	0	0	0	0%	0	0	437.6	0%
GLE0035 -3062	19	31	104	94.5	0	0	829	0%	112.3	68.9	2,105	5.3

Designated NSO Critical Habitat

In the 2012 Critical Habitat Rule the USFWS identified the physical or biological features essential to the conservation of the northern spotted owl, focusing on the primary constituent elements (PCE). PCEs are those specific elements (listed above on page 25) of the physical or biological features (PBFs) that provide for a species life-history processes and are essential to the conservation of the species. For the NSO, the PCEs are the specific characteristics that make areas suitable for nesting, roosting, foraging, and dispersal habitat. All PBFs for NSO CH must occur in conjunction with PBF1- Forested types in early-, mid-, or late-seral stages and that support the northern spotted owl.

Physical and Biological Features:

This term refers to the specific elements of the physical or biological features that provide for a species' life-history processes and are essential to the conservation of the species.

In this ruling the Physical and Biological Features (PBF's) focus on four components, the first of which must be included along with one of the last three. The four elements are:

1. Forest types that may be in early-, mid-, or late-seral stages and that support the NSO across its geographical range,
2. Nesting and roosting habitat,
3. Foraging habitat (subdivided into four ecological zones, two of which apply to MNF) , and
4. Dispersal habitat (subdivided into transience and colonization phases of dispersal).

Effects to Physical and Biological Features

The Mendocino LRMP (1995) and the USFWS (2009) defines nesting/roosting habitat as having a minimum of 60% canopy cover. As recommended by the 2011 NSP Recovery Plan and 2012 CH Rule, the Level 1 Team used local knowledge of NSO habitat use to develop the definitions of foraging and dispersal habitat. The minimum required percent canopy cover for both foraging and dispersal habitat is 40%.

Approximately **624** acres proposed for treatment occur in NSO Critical Habitat Unit (ICC 3 and ICC4).

There are a total of 6,783 acres of proposed CH in ICC3 with 1,205 acres of PBF2 469 acres of PBF4 and 1,208 PBF3 acres in the action area.

There are a total of 4,367 acres of proposed CH in ICC4 with 53 acres of PBF2, 582 acres of PBF3 and 1,066 acres of PBF4 habitat in the action area.

N/R, F, and dispersal PBFs have a minimum of 40%-60% canopy cover requirement. These harvest units contain minimal acres of PBFs of Critical Habitat; however, none of this habitat will not be removed or downgraded because these units will only have 70-100% probability mortality removed. Areas in the salvage units around the PBFs would get modified with mortality trees removed; however, no removal or degradation of habitat is expected to occur.

The proposed project will affect PBF's 2 and 3. **Effects expected to occur from treatment are described above in the Effects to NSO Habitat discussion above.** Roadside salvage and hazard tree removal along roads will have minor impacts to foraging habitat types which will result in a modification of trees adjacent to remaining suitable critical habitat. Habitat function will be maintained.

PBF 1, Forest Type:

Proposed activities are expected to have no significantly measurable effect on forest type. The proposed action includes commercial salvage, hazard tree abatement and fuels reduction work. Dead and dying trees will be removed for health and safety issues and commercial salvage. Replanting is not part of phase 1, but is expected to occur in phases 2 and 3. Future replanting of burned forest areas (especially any treated PFF) would replicate as closely as possible the mix of species found prior to the wildfire. Primary species selected for planting are Douglas-fir, ponderosa pine, sugar pine and incense cedar. These are the most common conifer tree species occurring in forests in this area, and this action will result in reestablishment of forest ecosystems representative of this area. Hardwood species will not generally be planted but commonly re-sprout following fire and are expected to be well represented as the forest stands are reestablished. In the long term, reforestation actions are expected to increase the probability the planted areas develop into mixed conifer and hardwood stands that NSO rely on for long-term survival, providing a beneficial effect to designated Critical Habitat.

PBF 2, Nesting and Roosting habitat:

Project activities proposed are not expected to affect canopy cover, basal area, diversity of tree sizes, the presence of large live trees with deformities potentially beneficial to NSO, or the presence and extent of a multi-layered, multi-species canopy with large overstory trees. This is because treatments would not remove or downgrade any nesting or roosting habitat. All 9 acres of nesting and roosting habitat in the treatment areas would not be removed or downgraded. Project treatments will be limited to trees, and these measures of habitat quality are overwhelmingly dependent on live trees.

In green PBF 2 habitat, commercial and roadside salvage will increase the open space below the canopy for NSO flight, thereby improving that measure of habitat suitability for NSO.

The element of PBF2 that will be most affected by the project is "*large snags and large accumulations of fallen trees and other woody debris on the ground.*" In green PBF 2, cutting hazard trees will remove potential nest, roost and perch sites, with a level of modifying in the quality of nesting/roosting habitats that is insignificant and discountable. Removing hazard trees will modify habitat quality by reducing the amount of large down logs adjacent to suitable habitat.. Effects are limited by the fact that these treatments target hazard trees and trees with high probability mortality, and the residual green nesting/roosting habitats have relatively few fire-killed snags than high-severity fire areas.

Treatments will not degrade or remove nesting/roosting habitats, as only 100% probability mortality trees would be removed or felled in critical habitat. An adverse impact to PBF2 is not expected based on proposed actions.

PBF 3, Foraging Habitat

Project activities in these habitats have potential to affect the following PBF3 features: presence of the specified conifer and hardwood tree species or shrubs; forest patches within riparian zones and conifer/hardwood edges; brushy openings and dense young stands or low-density forest patches within a mosaic of mature and older forest habitat; high canopy cover; multiple canopy layers; mean stand diameter. This is because treatments are limited to dead and dying hazard trees (only 100% probability mortality), and these measures of habitat quality are overwhelmingly dependent on live trees. As for the other PBF3 (green habitat) features, removal of hazard trees will increase the open space below the canopy for NSO flight, thereby improving this measure of habitat suitability for NSO; and effects to stands of nesting and roosting habitat are as described in the PBF2 section above.

The feature of PBF3 habitats that will be most affected by the project is *“large accumulations of fallen trees and other woody debris on the ground.”* Hazard tree removal activities will degrade habitat quality by removing hazard trees and thereby reducing the availability of large down logs. This will affect the future development of stands by removing hazard trees that would fall and become downed logs. These effects are limited by the fact that the residual green foraging habitats have relatively few fire-killed snags compared to high-severity fire areas.

Hazard tree and salvage tree removal will modify foraging habitats, a total of **8.3** acres of foraging habitat within designated critical habitat will be affected. Considering the limited number of hazard trees that will be removed adjacent to suitable green habitat and the small number of acres proposed for treatment, effects to PBF3 are insignificant and not adverse.

PBF 4, Dispersal:

Project activities within *“stands with adequate tree size and canopy cover to provide protection from avian predators and minimal foraging opportunities;” “younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, if such stands contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the transience phase;”* and *“habitat supporting the colonization phase of dispersal, which is generally equivalent to nesting, roosting, and foraging habitat as described in PBF’s (2) and (3), but may be smaller in area than that needed to support nesting pairs.”* Surviving dispersal areas generally had low fire severity and will have few fire-killed trees. Treatments will have negligible effects to dispersal habitat quality by removing some snags that may contribute somewhat to habitat quality. However, few overstory trees will be affected, and effects to canopy cover will be unaffected.

Hazard tree and salvage tree removal will modify dispersal habitats, a total of **16.16** acres of dispersal habitat within designated critical habitat will be affected. Removal of hazard trees is

likely to have little or no effect on the vegetative structural characteristics of these stands and the ability of NSO to disperse. No suitable green overstory trees will be removed, and canopy cover will not be reduced below the levels needed to facilitate dispersal. The activities proposed for this project are not expected to negatively impact spotted owls' ability to occupy and disperse through the area. Considering the limited number of hazard trees that will be removed adjacent to suitable green habitat and the small number of acres proposed for treatment, effects to PBF4 are insignificant and not adverse.

Post-fire foraging

Burned areas that no longer meet the definition of NSO nesting/roosting, or foraging habitat were not addressed in the PCE's (PBF's) of previous critical habitat designations and are also not considered in the 2012 revised critical habitat rule. FWS also does not include these areas in their mapping of baseline NSO habitat availability. Although this is the case, NSO have been documented using these areas (as described in the "spotted owl use of burned areas" section), and effects to PFF may impact the utility of critical habitat subunits to NSO, at least in the short term. These effects are described in the "Effects to NSO Habitat" section. Proposed treatments may reduce the usefulness of PFF to NSO by removing potential NSO perching sites and reducing the numbers of snags and down logs.

A total of **11.7** acres of post-fire foraging habitat within designated critical habitat will be affected. A total of 0.22% of the total PFF in the action area would be affected in CH. A very minimal amount of area across the action area and forest landscape. As discussed previously in the Effects to NSO habitat section, removing snags in PFF habitats may decrease use of these areas by foraging owls, but any negative effects are likely to be insignificant and discountable. By avoiding treatments within the PFF with diffuse edge, the PFF areas most likely to be used by owls will be retained. In the long term, prompt project implementation is expected to increase the probability that these areas develop into suitable NSO foraging habitat through reestablishment of mixed-conifer forest stands.

Table 69. Total acres of NSO from commercial units, roadside commercial salvage and fuels units in designated CH

Habitat	Pre-Treatment Acres (Salvage and Roadside)		Post-treatment Acres (Salvage and Roadside)	
	PBF acres in project units	PBF CH acres in Action Area (1.3 mile buffer surrounding the project area)	PBF CH acres treated	PBF CH Acres in Action area
N/R	0	1,259	0	1,259
F	1	1738	1(modified)	1738
D	1.16	954	1.16 (modified)	954
PFF	8.7	185	8.7 (removed)	176.3

A total of **1.16** dispersal and **1** acres of foraging would be modified and maintained because only 70-100% probability mortality trees would be removed along roadside salvage. No nesting/

roosting habitat would be treated in critical habitat. A total of **8.7** acres of PFF habitat would be treated and removed from commercial units/ fuels and roadside salvage

Table 70. Total acres of NSO from Roadside and fuels treatments

Habitat	Pre-Treatment Acres (Roadside and fuels)		Post-treatment Acres (Roadside and fuels)	
	PBF acres in project units	PBF CH Acres in Action area	PBF CH acres treated	PBF CH Acres in Action area
N/R	0.8	1,259	0.8 (modified)	1259
F	7.3	1738	7.3 (modified)	1738
D	15	954	15 (modified)	954
PFF	3	185	3 (removed)	182

A total of **8.1** acres of NRF and **15** acres of foraging would be modified and maintained because only 70-100% probability mortality trees would be removed along roadside salvage. No nesting/roosting habitat would be treated in critical habitat. A total of **3** acres of PFF habitat would be treated and removed from roadside and fuels work.

Table 71. NSO CH Effects from the Plaskett-Keller August Complex Phase 1 Project

	N/R	F	Dispersal	PFF	Total
Acres of habitat type affected by Activities	0.8	8.3	16.16	11.7	37.4
Habitat Maintained	0.8	8.3	16.16	0	25.7
Habitat Downgraded/ removed	0	0	0	11.7	11.7

The project *may affect, but is not likely to adversely affect* (MANLAA) the NSO designated critical habitat due to: **1)** project actions would not be removing or downgrading any PBFs in critical habitat; **2)** PBFs are only located in salvage and roadside units where 70-100% probability mortality will be removed; **3)** the maintenance of snags and downed logs within the treatment units which would provide potential foraging roosts and prey species habitat if NSO do forage in high severity burned areas; **4)** only 0.22% of post fire foraging habitat would be treated out of the action area **5)** the 27% of low severity burned areas left untreated **-6)** the high amount of burned, untreated suitable NRF habitat available for foraging in home ranges within the north eastern and southern portion of the action area.

Cumulative Effects to Critical Habitat

There are no private, State or Tribal lands included in the 2012 critical habitat PBFs within the project action area. Under the ESA definition of cumulative effects, there are no cumulative effects possible for critical habitat.

SUMMARY OF CUMULATIVE EFFECTS OF FEDERAL ACTIONS FOR NSO

The cumulative effects for the action area is comprised of mostly of Federal lands with a mix of private land. There are a few parcels of private ownership adjacent to the project treatment units to the north and west. Federal lands are administrated by the Mendocino National Forest (28,101 acres, about 96% of the action area) as well as private land (1,288 acres, about 4% of the action area). As of November 10th, 2021, there are no records in CNDDDB of Timber Harvest Plans (THPs) or Non-Industrial Timber Management Plans (NTMPs) in the project area. However, given past observations of post-fire actions on private lands, it is reasonable to assume that there could be salvage harvest on private land that could be filed at any time. Given the past patterns of salvage harvest on private land, and to account for these affects in this analysis, we are assuming that all private land in the action area that was affected by the August Complex fire, regardless of ownership, will be salvage harvested. Plaskett-Keller August Complex Phase 1 project treatments (2,164 acres), combined with the treatments accomplished and yet to be accomplished in the Smokey Fuels Project, Hardin Fuels Project (1,175 acres), Snow Basin (231 acres), Cold Springs (225) and Powell Salvage (246 acres – does not overlap, so doesn't get counted) would involve 25% of the total Action Area.

These treatments for all of these projects would not all be conducted within the same year. The smokey and Hardin fuels treatments have not been fully completed and are not expected to be fully completed because of the August Complex Fire has burned many of the original units. The Cold springs and Powell salvage Projects are now in place of smokey and Hardin with new units and is proposed to be implemented in 2022 after LOPs have occurred. Any displaced prey species would be able to recolonize treated areas soon after implementation. All the treatments combined would not disrupt dispersal of floater or juvenile birds through the area. The retention of suitable habitat and the conifer structure being retained would continue to provide cover for dispersal. All the treatments combined would not disrupt dispersal through the area due to the fact that the amount of dispersal habitat would not be removed and that all projects would not be conducted at the same time. Although treatments may be conducted within foraging and dispersal habitat, adequate amounts exist within the Action area to provide multiple alternate routes during treatments. The retention of suitable habitat, nest groves and late successional reserves and the conifer structure being retained would continue to provide cover for dispersal and prey species habitat. Any displaced prey species would be able to recolonize the units soon after treatments are complete.

A total of **1.22** acres of suitable foraging and dispersal habitat would be temporarily downgraded under the Plasket-Keller August Complex Phase 1. Although some foraging and dispersal habitat would be removed or downgraded, the units are small and only in one area at the Plaskett Meadows Campground. None of the seventeen activity centers in the action area would have home ranges or core areas suitable habitat removed downgraded from salvage and fuels treatments. It is anticipated that implementation of the Plaskett-Keller August Complex Phase 1 Treatments in the action area, in combination with these past, present, and reasonably foreseeable future actions, would adversely affects for spotted owls. It was determined to be an adverse effect only by definition. Removal of any suitable habitat no matter how minimal is considered an adverse effect. Realistically impacts to habitat would not be detrimental long-term and the odds individual owls to be incidentally taken/ killed is highly unlikely based on all mitigations in place. Although some habitat would be temporarily downgraded within these projects, the amount is approximately 0.5% of the total habitat available within the Action Area. The effects of noise or smoke

disturbance toward breeding would be reduced or negated through LOP's in place. Both core and home range area functionality of activity centers would not be reduced.

The tables below show past, present and proposed federal actions that would occur in the Plaskett-Keller August Complex Phase 1 action area.

For the summary of cumulative effects involving non-federal actions, see the summary of cumulative effects on page 123 of this document.

Table 72 – Total cumulative treatment acres (proposed or partially completed) for all projects within the Plaskett-Keller August Complex Phase 1 Action Area (AA)

Treatment	Smokey/ Hardin	% of AA	Snow Basin	% of AA	Cold Springs/ Powell	% of AA	Plaskett- Keller	% of AA	Total (acres)	% of AA
Timber harvest, thinning/ fuels	2,856	9.7%	231	0.8%	0	0	0	0	3,575	11.8%
Commercial/fuels Salvage/ Roadside	486*	1.6%	0	0	225	0.7%	2,164	7%	2,389	7.7%
Habitat Enhancement/ replanting	1,678	6%	0	0	NA	0	0	0	1,678	6%
Total	5,022	17.3 %	231	0.8%	225	2%	2,164	7%	7,642	27.1%

**The 486 acres of mastication for the Smokey project have not been completed. Mastication is proposed to occur in 2022 and beyond.*

Table 73 – Total cumulative acres for all suitable **nesting** habitat treated or proposed in the Plaskett-Keller August Complex Phase 1 Action Area (AA).

Treatment	Total in AA	Smokey/ Hardin	% of suitable	Snow Basin	% of suitable	Cold Springs/ Powell	% of suitable	Plaskett- Keller	% of suitable	Total (acres)	% of suitable
Nesting	1,562	432* (5.9 mastication units)	27%	0	0	0	0%	6.6 (none removed)	0.02%	438.6	28%

**The Smokey and Hardin fuels commercial components are no longer proposed to be completed. However, a total of 5.9 acres of NR habitat would be treated for mastication in Smokey units in the near future. The Snow Basin project has already been completed. A total of 12.5 acres of NR habitat would be treated from the Plaskett-Keller, Cold Springs/Powell and Smokey projects in 2022 and beyond.*

Table 74 – Total cumulative acres for all suitable **foraging** habitat treated in the Plaskett-Keller August Complex Phase 1 Action Area (AA).

Treatment	Total in AA	Smokey/ Hardin	% of suitable	Snow Basin	% of suitable	Cold Springs/ Powell	% of suitable	Plaskett- Keller	% of suitable	Total (acres)	% of suitable
Foraging	2,473	608* (31.5 mastication units)	608* (31.5 mastication units)	77	3%	0	0%	96 (only 0.8 removed/ downgraded)	4%	781	31%

**The Smokey and Hardin fuels commercial components are no longer proposed to be completed. However, a total of 31.5 acres of Foraging habitat would be treated for mastication in Smokey units in the near future. The Snow Basin project has already been completed. A total of 127.5 acres of habitat would be treated from the Plaskett-Keller, Cold Springs/ Powell and Smokey projects in 2022 and beyond.*

Table 75 – Total cumulative acres for **all** suitable habitat (NRF and dispersal) treated within the Action Area (AA)

Treatment	Total in AA	Smokey/ Hardin	% of suitable	Snow basin	% of suitable	Cold Springs/ Powell	% of suitable	Plaskett- Keller	% of suitable	Total (acres)	% of suitable
Total	6,475	1,034* (47 mastication units)	16%	77	1.1%	9.31	0.1%	470.6	1.6%	1591	24%

**The Smokey and Hardin fuels commercial components are no longer proposed to be completed. However, a total of 47 acres of NRF and Dispersal habitat would be treated for mastication in Smokey units in the near future. The Snow Basin project has already been completed. A total of 527 acres of habitat would be treated from the Plaskett-Keller, Cold Springs/ Powell and Smokey projects in 2022 and beyond.*

Continued management in the areas listed above combined with Plaskett-Keller Treatments should not be detrimental to population levels for the spotted owl across its range and the forest even with current impacts from wildfire. The Black Butte River watershed would continue to provide for late successional dependent species after implementation of this project as no late successional habitat would be treated.

Although a total of 2,164 acres would be treated, only 0.8 acres of foraging and 0.42 acres of dispersal habitat on Matrix lands would be removed. These acres occur in one area at Plaskett Meadows in the Action area. The effects of noise disturbance in all projects would be reduced or negated through LOP's.

Forest Sensitive Species

Northern Goshawk (NOGO)

Direct Effects

The proposed activities will not alter or reduce suitable habitat for this species. Habitat utilized but goshawks is very similar to NSO and based on the current conditions, the fire burned 65% of nesting and foraging habitat in the project action area. The project area likely only provides dispersal habitat for goshawks in its current post fire condition

There are no known nests within the project action area. Four sightings have occurred near Mendocino Pass, Smith Camp and Chimney Rock in 1970 and 1990. No recent sightings have occurred. Goshawk nesting habitat and reproduction would not be directly affected by treatments proposed. There is potential for noise and smoke disturbance to individuals perched near treatment units which could result in displacement. However, goshawks would likely move to another area away from loud disturbance of vehicular traffic and mechanical equipment enters the units. Hardwood trees, as well as other non-merchantable tree species, would be retained, which will provide current and future cavities and coarse woody debris.

Moderate to dense canopy closure from overstory trees provides key habitat features and contributes to structural complexity of forested environments, both of which are necessary for snag-dependent wildlife and their prey. Treatments in high severity burn areas are not likely to negatively affect snag- dependent species because canopy cover has already been greatly reduced by the fire.

Removing only trees that are dead would not ultimately affect the canopy closure, as these trees would not contribute to canopy closure in the long term. Removing these trees may reduce the availability of future denning, resting, nesting or roosting. However, it is unlikely that fisher or goshawk would select sites without adequate canopy cover. In addition, cavities are not likely to be present in most salvage trees because recently-killed fire hardened trees require additional time for cavities to form. The project is not likely to significantly alter canopy closure.

Direct effects would be very minimal to none, and is not expected.

Indirect Effects

Goshawks may be indirectly affected by the project as habitat for their prey is removed or enhanced. Birds provide a large portion of the goshawks diet. Ground foliage, and cavity nesting birds could potentially experience temporary displacement during salvage and fuels reduction treatments. Adults may still be available as prey, however, reproduction from that particular clutch could be lost if fuels reduction treatment and salvage disturbs nests or removes burned nest trees. Affected birds could potentially re-nest in the same year, with adequate time to raise second clutch, outside of treatment areas. However, birds would have likely moved out of completely burned salvage units in finding better nesting areas. Snags and CWD will be retained based on the LRMP guidelines, so there should be adequate snags left for cavity nesters such as pileated woodpeckers.

Foraging habitat for goshawk would be altered within the treatment areas by the removal of dead trees, however, functionality would be maintained with the retention of non-hazardous and non-merchantable conifer and hardwood trees, and the abundant snag habitat outside the treatment

areas. Treatments would remove only dead and dying trees. Live healthy trees would be retained. Most of the trees would be removed from areas that were burned at moderate to high severity and have little to no canopy closure remaining. Due to effects of the fire, the likelihood that goshawk would utilize the treatment areas that contain the deadest trees is low. The live greener areas that may be utilized by goshawk would have no or few trees removed. Large hardwood not considered hazardous would also be retained and would provide structure for foraging and dispersal.

Summary of Effects

Because there are no known nest, breeding disturbance and direct effects are not expected to occur. Potential for displacement of individuals present could occur from noise and smoke, however, goshawks are not likely to be perching in high burn severity units.

Based on the minor effects to prey species and potential alteration of some foraging habitat, some indirect impacts are expected.

Bald Eagle

Direct Effects

The Plaskett-Keller treatments would have no direct effects upon the bald eagle reproduction due to the lack of nesting habitat within the project area. Foraging habitat would not be altered as removal of dead and dying trees from high burn severity areas do not qualify as foraging habitat.

Indirect Effects

Salvage treatment activities including snag and hazard tree removal, prescribed burn and tractor piling have the potential to negatively affect bald eagle prey base by introducing sediment concentrations into the main stem of Black Butte River and its tributaries. Sediment has the potential to negatively affect prey fish populations by clogging gills or suffocating egg masses and filling in spawning gravels. However, the application of Best Management Practices (BMPs) and streamside management zone buffers in place from hydrological resources would minimize the potential effects to fish as prey for bald eagles. The Biological evaluation for fisheries for this project (Abel 2021) states very minimal sedimentation impacts to any listed or non-listed fish species. The Aquatic conservation strategy, application of BMP's, stream side management zones and protection of riparian reserves during project implementation would ensure maintenance of fish populations downstream. Therefore, it is improbable that any significant decline in fish populations would occur from any proposed treatments.

Another indirect effects would include the removal of snags and hazard trees used for perching and resting. However, there are snag retention guidelines in place to ensure that there are higher quality snags remaining on the landscape for bald eagle roosts and there will be numerous snags remaining across the landscape post salvage treatment, so indirect effects will be minimal to none.

Summary of Effects

Bald eagle nesting habitat and reproduction would not be affected by treatments proposed. Based on very minimal sedimentation impacts to prey fish species, direct or indirect impacts are not expected. *Because there are no direct or indirect effects anticipated by management actions (salvage, fuels reduction) on public or private land, no cumulative effects are anticipated by any of the proposed actions.*

American Peregrine Falcon

Direct Effects

Suitable nesting habitat for peregrine is not known to be in the project area. Potential nesting could occur along the Black Butte River, however, proposed activities would not be occurring adjacent or in close proximity to the river. Breeding or reproduction disturbance is not expected to occur.

Foraging habitat would not be altered as removal of dead and dying trees from high burn severity areas do not qualify as foraging habitat.

Indirect Effects

Ground, foliage and cavity nesting resident migratory birds could potentially experience temporary displacement or nest loss during treatments. Adults would still be available as prey to any foraging falcons, however, reproduction could be lost if there is any disturbance to any remaining active nest in the burned areas.

Retention of snags and hardwoods would continue to provide for cavity nesting and bark gleaning birds and retention of woody debris could attract ground foragers. Tree and cavity nesting adults could be temporarily displaced through noise disturbance, however, they would still be available to the falcons as prey.

Another indirect effects would include the removal of snags and hazard trees used for perching and resting. However, there are snag retention guidelines in place to ensure that there are higher quality snags remaining on the landscape for peregrine falcons roosts and there will be numerous snags remaining across the landscape post salvage treatment, so indirect effects will be minimal to none.

Summary of Effects

Peregrine falcon nesting sites would not be disturbed, altered or removed, treatments would open up areas for foraging and although foraging birds maybe temporarily displaced during treatment, it would have little effect on foraging success due to the large size of home ranges. Based on these facts, direct effects would not be expected.

Based on the fact that only a small percentage of prey species could potentially be temporarily displaced (but still available as prey) or nests disturbed and the large foraging range of peregrine, indirect effects would be minimal. *Because there are no direct or indirect effects anticipated by management actions (salvage, fuels reduction) on public or private land, no cumulative effects are anticipated by any of the proposed actions.*

Townsend's Big-Eared Bats, Pallid Bats and Fringed Myotis

Direct Effects

These three bat species may be affected by the salvage of trees that have sloughing bark that may be used as a roost. Although conifer would be removed in commercial salvage and roadside units, sufficient large over-story trees would be retained in all of the units to provide snags into the future. Hardwoods also provide roosting cavities to supplement any existing snags.

The proposed action would salvage merchantable trees on 944 acre units and 1220 roadside acres. Steel et al. (2018) were not able to conclude that salvage logging negatively affected snag roosting bats because their acoustical surveys were better suited to detect foraging bats. Hayes and Loeb (2010) (as cited in Steel et al. 2018) concluded that removing snags would remove potential roost sites for bats. Steel et al. (2018) suggest that for short-term benefits the retention of large trees and snags would help maintain roosting sites. There are snag retention guidelines in place that will help maintain roost structures on the landscape. Outside of treatment units there will also be a plethora of snags available for roosting bats. Around rock outcrops that may or may not be used by bats will also have vegetation retention guidelines to protect microclimates of the outcrops.

Any remaining foraging habitat would be modified, but not reduced. These bat species will forage in a variety of habitats, but the vegetation must be open enough to allow flight access. Foraging areas have opened up drastically with much of the project action area burned; removal of merchantable trees will only increase open areas across the landscape for potential foraging.

The proposed treatments has the potential to affect bats in their day roosting sites through noise , disturbance, removal of merchantable trees surrounding roost sites, smoke introduction, and the limited possibility of snag loss due to fuels reduction. Bats roosting in tree cavities during daytime project implementation could be disturbed sufficiently to temporary roost leave. If disturbed during the maternity season, reproduction could be lost for the year in the event that young were not able to escape and adults abandon them. It is unlikely that females would abandon their young due their ability to carry pups roost to roost. Given the nature of roosting, the project is not expected to remove much roosting structures, unless they pose a threat to human safety. If maternity roosts are discovered, an LOP of 300 feet would be implemented from May 15th to August 15th.

Hazard fuels reduction treatments (pile and understory burning) would be done outside of maternity season and would not cause a potential loss of reproduction. During this time, insect populations are low, and bats will seldom forage. During any burning treatments, some woody debris or snags maybe consumed by fire. In the cold season, these bats typically roost singly or in small numbers (Hermanson and O'shea 1983) and potentially move to lower elevations. It is unlikely more a few individuals (if any) would be impacted by any burning.

Use of haul routes under this project would not remove or modify suitable bat habitat. Forest highway 7 will be the main route used for hauling and it already receives high levels of use. Hauling wouldn't not significantly increase the noise level above the average use of these roads.

Roosts for bats may exist along this route, however, these bats would be habituated to high vehicular traffic and the addition of logging trucks should not cause abandonment of roosts.

Indirect Effects

Forest vegetation, coarse woody debris and snags provide prey foraging and cover habitat. Salvaging operations could potentially reduce the amount of habitat available and may reduce insect numbers. Prey species could be displaced by removal of merchantable trees, but would be able to relocate to patches of green trees and other locations that won't be affected. Salvage operations would reduce stands, but snag and coarse woody debris (CWD) retention guidelines would provide for insect habitat.

Hazardous fuels reduction treatments after salvage operations could reduce prey species temporarily, however, remaining vegetation, snags and CWD would provide cover and habitat. Units with fuels reduction work may have a short-term reduction in insect abundance, but given the large foraging range of bats this should not affect foraging success. Any burning treatments would occur in winter or spring months, when insect populations are low, and bats aren't really foraging. Buchalski et al. (2013) cited studies that suggest bats are resilient to landscape scale fire because the fire removes vegetation and litter that may hinder bats from foraging and that may disrupt echolocation. By removing snags, small diameter trees, and understory vegetation foraging opportunities may be further improved for bats (Hayes and Loeb 2010 in Steel et al. 2018, Steel et al. 2018).

Any sediment entering watercourses from project work could cause isolated effects to aquatic insects that could potentially become prey for bats. Erosion control measures/ BMPs that would be put in place for aquatic protection would protect aquatic species from increased sedimentation. Due to only a small number of aquatic insects could potentially be affected, aquatic prey are not expected to be impacted.

Summary of Effects

Based on potential disturbances of maternal colonies, removal of snags and hazard trees that could be used for roosting/ perching, and potential opening of foraging habitat, direct impacts could occur. Noise from the proposed project has the potential to disturb pallid bats in their day roosting cavities. However, it is unlikely that noise disturbance would cause females would abandon their young due to their ability to carry pups from roost to roost during normal roost-switching behavior. The tendency for bats to switch roosts often under normal circumstances would reduce any negative effects to reproduction.

Salvage logging may have short-term effects to prey species and foraging habitat. However, based on the bats' large foraging ranges, the amount of untreated vegetation, and the temporary nature of the project, project effects to bat foraging habitat are expected to be insignificant and temporary.

Due to the extent of suitable snags and coarse woody debris that will be left within the project action area and (LRMP guidelines) the designation of LOPs around any rock outcrops with found colonies and the limited projects on going on private land within the planning area, cumulative effects are anticipated to be minimal for the Townsend's big-eared bat, pallid bat and the fringed myotis. Impacts from the proposed project are considered to be minor for these bat species, and therefore will not create adverse effects when combined with past activities on the Forest and those on adjacent private land.

American Marten, Pacific Fisher, North American Wolverine

Direct Effects

These mustelid species are considered late seral species and the with much of LSRs (Late Successional Reserves) burned in high severity, much of the suitable habitat is no longer optimal in the project area. LSRs are not included in the treatment area, so any late seral habitat remaining is not expected to be altered. Treatment would only occur on matrix land and only in moderate to high burned severity areas where habitat is no longer likely suitable. Because habitat is no longer likely suitable, proposed treatment is not expected to degrade any suitable habitat. While much of the habitat is not currently meeting the definition of foraging and denning habitat, as stated in existing conditions, mustelids have been found to use burned areas for foraging, especially burned late-successional habitat. Denning and resting habitat is likely no longer present in the project area with so much habitat burned.

To maintain potential marten, fisher and wolverine foraging options in these burned areas, the MNF snag retention and Coarse Woody Debris (CWD) retention guidelines (LRMP 1995) will be followed. In addition to any live and green trees, the trees/ snags to be maintained large fire killed trees, fire-killed hardwoods and pre-fire snags that don't cause a safety hazard. Existing pre-fire logs and cull (unmerchantable portions) logs will also be left on site. It is expected that the number of trees/snags and logs left will be a minimum of 4 snags and 4 down logs per acre.

Detections have occurred for both marten and fisher in the action area dating back to 1970, 1990 and 1998. Most recent wolverine sightings have occurred in 2004 in the Yolly Bolly wilderness. over No known denning sites are known to occur in the project area. This area is not likely inhabited by denning individuals based on how much area was burned. Any marten or fisher in this area are likely dispersing individuals. Any disturbance from salvage or fuels treatments could include noise and smoke. Direct injury or mortality is not expected as marten and fish are agile mammals and wouldn't be in an area with high amounts of disturbance occurring. Potential impacts from treatments are very minimal as these furbearers have such a large territory range the likelihood of disturbance in an already burned landscape is almost none. Direct effects are not expected for these species.

Indirect Effects

Proposed salvage and fuels reductions treatments could alter any remaining habitat for prey species within the action area. Small mammal prey species could be displaced during salvage, mastication, piling and burning. Disturbed prey would likely move into adjacent undisturbed and low or non-burned stands still remaining during the interim. Many dens for prey are underground burrows beneath structures on in snag cavities that could be disturbed and removed by operations. Remaining patches of green trees adjacent to salvage units would not be removed or disturbed could be a refugia for any prey within the treatment units.

Rodents and shrews, which are sources of prey, do well in many different successional stages as long as cover is present. Dead and dying trees will be removed reducing some canopy cover for high burned areas that could still house some refugia for prey. However, following the LRMP snag and CWD retention will allow burned areas to still provide some cover and refugia. A portion of small mammal and prey refugia will be altered by snag removal that would cause short-term

displacement, though, they should be able to re-colonize soon after treatments are complete and would still be available as prey within the landscape.

Rodents and shrews do well in many different successional stages as long as cover is present. With the retention of all trees expected to live, retention of black oak snags, retention conifer snags, and logs following the harvest, the prey species habitat would be maintained. A portion of prey species habitat would be altered, and they could experience short-term displacement; however, they should be able to re-colonize soon after treatments are complete and would still be available as prey.

Proposed treatment activities would alter habitat for prey species within the project area if enough vegetation has regrown prior to treatment implementation. Although some remaining ground vegetation may be disturbed during treatment, it would be insignificant due to the large amount available outside the burnt units and the small percentage affected within the units. If prey species are present during treatments, they will be able to move into adjacent, untreated stands. Retaining large woody debris, snags, hardwoods and the ability of the animals to temporarily move away from the disturbance and then recolonize soon afterwards, treatments would have only short-term effects.

Habitat attributes such as CWD and snags for prey habitat and cover for foraging (multi-layered stands) can be altered drastically and be limiting after severe wildfire until fire-killed trees fall. While fire damaged dead trees would be removed, all live, non-hazardous, and non-merchantable trees would be retained to provide for future CWD and snags. The project will also retain a minimum of 4 logs per acre during project implementation. Hardwood trees not posing a hazard would also be retained which potentially could provide cavities.

Burned forests can influence small mammal populations and distribution (Zwolak and Foresman 2007). Zwolak and Foresman (2007) found small mammal communities differed between burned and unburned forest habitat. Generally, burned areas had a higher proportion of deer mice when compared to other species captured in the study area, but species diversity increased the year following the fire. Generally, deer mice numbers increased in fire affected areas (Zwolak and Foresman 2008). However, red-backed voles, bushy-tailed wood-rats, and flying squirrels avoided burned areas for at least two years after the fire. This avoidance of burned areas was attributed to the possible reduction in food resources, predation, and distance from cover. Because high severity fire has affected many acres of the project area, deer mice are likely present and will likely increase in density. Shrubs are likely to quickly re-establish within most areas that lack tree canopy cover. After shrubs and oaks re-sprout, woodrats should become more abundant.

Understory and pile burns in treatment units could lead to temporary displacement or den loss for prey species. If displacement does occur, these species would still be available as prey as they would find another undisturbed area to utilize. The potential for direct mortality from incineration or asphyxiation during fuels reduction is considered to be low (USDA 2006). While fire mortality may occur for some rodent species, their high productive potential enables them to increase rapidly. Although, some snags and coarse woody debris will be lost to treatment, adequate numbers would be retained based on LRMP guidelines to provide for prey species after treatment.

Summary of Effects

Based on the lack of known denning habitat in the project area and the large size of territories, direct effects are not expected. Historical sightings for marten and fish have occur in the project action area, however, with the burned over landscape, any individuals moving forward are likely dispersing individuals. Potential noise and smoke disturbance from treatment could occur if individual are present, however, likelihood of any individual present during treatment is minimal to none.

These mustelids have been known to continually use burnt landscapes to forage as their home range covers a very large area. Foraging habitat and prey species could be impacted from salvage and fuels treatments, but with snag and CWD retention guidelines, foraging habitat can still remain function. Though, alteration of any foraging habitat would result in indirect effects to marten, fisher and wolverine.

Analysis Common to aquatic related wildlife

Sedimentation caused by commercial salvage, roadside salvage, watering of roads and fuels reduction could travel from disturbed sites to Butte Creek, Pinto Creek, Atchison Creek, Cold Creek, Plaskett Creek and other unnamed tributaries flowing into Black Butte River. Pile and understory burning would consume small surface fuels and exposed soils to the possibility of sediment transport. The areas prescribed for fire would occur in commercial salvage units and roadside salvage units. These prescribed burns typically burn at low intensity and do not consume all small surface fuels left. Therefore, in an event erosion does occur within proposed burning areas, there is a low probability of sedimentation into watercourses.

The implementation of BMPs, water drafting design criteria, water drafting LOPs, SMZ buffers, protection of riparian reserves and adherence to the Aquatic Conservation Strategy would minimize sedimentation into drainages. It is very unlikely any significant decline in aquatic species populations would occur from proposed treatments.

Use of existing roads under this project would not remove or modify any suitable habitat for aquatic species. Forest highway 7 and 22N11 would be the major routes through this project. Haul routes from the project area would involve secondary roads that flow into Forest Highway 7. In general, these routes receive moderate to high level of vehicular traffic. Hauling would occur after breeding season for amphibians. Erosion control measures/ BMPs required from hydrology would protect and minimize increased sedimentation into watercourses.

Foothill Yellow-legged Frog (FYLF)

Direct Effects

Suitable habitat is located within and adjacent to the proposed roadside and salvage units. Breeding frogs do occur in the main stem of Black Butte River, but have not been detected in any

of the tributaries in the project area. However, the tributaries flowing into the Black Butte River can be utilized based on stream connectivity. If frogs are determined to be present and breeding in drainages of the project units, impacts could include impacts to egg masses, filling of pool habitat and noise disturbance resulting in individual displacement. These frogs have a high affinity to water and tend not to stray beyond 25 meters from aquatic sites.

Sediment loads entering stream courses has the potential affect frog reproduction clogging larvae gills or covering egg masses. However, as discussed under “ Analysis to common aquatic wildlife”, sedimentation should not impact all life stages. Any stream water drafting site determined for this project would have an LOP from March 15 to June 15 to protect any FYLF life stages present and utilizing those sites. LOPs can be lifted only after amphibian surveys have been conducted to clear those drafting sites. All salvage units that cross into perennial and intermittent streams will have riparian reserves and stream side management zones in place which will prevent direct degradation on habitat.

Indirect Effects

Suitable habitat for prey species of the FYLF is located within and adjacent to proposed roadside and salvage treatment units. Sedimentation into stream courses has the potential to impact aquatic insect and invertebrate prey species by filling interstitial spaces used in stream beds. However, as discussed under “ Analysis to common aquatic wildlife”, sedimentation should not impact prey species for FYLF.

Summary of Effects

Based on the implementation of stream water drafting LOPs, BMPs, SMZ buffers and hydrologic design criteria to eliminate disturbance to frogs there would be no direct effects. Due to the low potential for detrimental levels of sediment introduction and adherence to BMPs, sediment would have minimal to no effect to stream habitat. Based on the low potential for detrimental levels of sediment introduction, the adherence to BMP's and minimal effects to prey species, there would be no indirect effects to the FYLF.

Because there are no direct or indirect effects anticipated as a result of management actions on public or private lands, no cumulative effects are anticipated by the proposed actions.

Western Pond Turtles (WPT)

Direct Effects

Potential Suitable habitat is located within and adjacent to the proposed roadside and salvage units. Water drafting in Plaskett-Lakes and large pools in streams has the potential to disturb breeding turtles. Human and vehicle presence at these sites could potentially disturb turtles that are potentially basking and utilizing those aquatic sites. Turtles have the ability to disperse quickly in water if disturbed. This could interrupt breeding, basking or foraging temporarily, however, would not affect egg laying.

Plaskett Lakes are designated drafting sites, though, western pond turtles have never been detected here. These lakes are at the maximum elevation range for this species. During drafting, a minimum of 20 inches of water would be maintained at all times for large stream pools or lakes. The LOP placed for stream drafting sites to FYLF would help minimize any impacts to WPT present. WPT have been detected along the main stem of Black Butte River as well as Butte Creek just downslope of forest route 22N11. Streams that could be used for migration, dispersal or foraging would be protected by streamside management zone buffers, riparian reserve protections and BMPs. The majority of the tributaries in the project area do flow subterranean along reaches and do not support large pools for optimal foraging and breeding habitat. Water drafting would only cause a temporary disturbance and would not be expected to cause harm to the turtles.

There is potential for turtles to be injured or killed if operations occur during migration movements (nesting or wintering). Nesting can occur in May, June or July and nests are usually excavated along southern slopes with good solar exposure. Turtles nests range from 17-20 meters from water, although some have been documented as far as 500 meters. Hatchlings would emerge and move to watercourses in early spring, usually in March or April. WPT would most likely move to wintering sites below the snow level. Vehicular traffic and mechanical equipment have the potential to crush and disturb turtles as they can be present along roads, within and adjacent to treatment units. However, likelihood of direct mortality is low based on the timing of the salvage, focus of work is not in-channel or pools, tributaries within the project area do not provide optimal habitat and turtles tend to displace rather quickly from large disturbances. Based on minimal potential for disturbance to breeding and over-wintering turtles, impacts are not expected to be adverse or significant to viability of populations.

Indirect Effects

Sedimentation into stream courses has the potential to impact aquatic insect and invertebrate prey species by filling interstitial spaces used in stream beds. However, as discussed under “ Analysis to common aquatic wildlife”, sedimentation should not impact prey species for WPT.

Drafting sites for this project have not been determined, however, with Plaskett Lakes being such close proximity it is the most likely drafting site. Plaskett Lakes would provide optimal habitat with open basking areas, vegetation for cover and food and insect and invertebrate species for foraging. Any insects or invertebrates within this potential drafting site has the potential of being removed as water is being siphoned. This should only affect a small portion of the insect population with a small portion of the site. Many of the small aquatic insects and invertebrates reside under structures, within vegetation or are buried in the substrate and would not be affected. Other insects that reside on the surface or sub-surface would be displaced away from the drafting disturbance. Drafting would have minimal affect to prey for turtles.

Summary of Effects

Based on the implementation of stream water drafting LOPs, BMPs, SMZ buffers and hydrologic design criteria to minimize sedimentation there would be minimal impacts. *However, based on the*

potential for direct disturbance from vehicular traffic and mechanical equipment western pond turtles, there could be direct effects. Based on minimal potential for disturbance to breeding and over-wintering turtles, impacts are not expected to be adverse or significant to viability of populations.

Based on the minimal affect to prey species and minimal amounts of sediment loading, there would be no indirect effect to western pond turtles.

Cumulative Effects

Under NEPA (40 CFR 1508.7), cumulative effects represent the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." The following is anticipated cumulative effects within the Action area. Based on the analysis provided in this report and the following rationale, it is anticipated that implementation of this project, in combination with the past, present, and reasonably foreseeable future actions, would not result in an adverse effects determination for forest sensitive species in this document.

Cumulative effects include the effects of future, State, local or private actions that are reasonably certain to occur in the planning area. Future federal actions that are unrelated to the proposed action are not considered because they require separate consultation pursuant to Section 7 of the Endangered Species Act.

Current habitat conditions are assessed to determine the cumulative effects of past actions. It is then evaluated how the action alternative, along with other concurrent and foreseeable actions, would alter existing habitat.

Past Actions

In order to understand the contribution of past actions to the cumulative effects of the proposed action, the analysis relies on current vegetation conditions as the most useful and relevant information regarding the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.

Forest Management

The following federal timber sales/ fuels projects have occurred or will occur in adjacent and within the proposed Plaskett-Keller August Complex Phase 1 project:

Past management within the action area

Table 76. Total cumulative treatment acres (proposed or partially completed) for all projects within the Plaskett-Keller August Complex Phase 1 Action Area (AA)

Treatment	Smokey/ Hardin	% of AA	Snow Basin	% of AA	Total (acres)	% of AA
Timber harvest, thinning/ fuels	2,856	9.7%	231	0.8%	3,575	10.5%
Commercial/fuels Salvage/ Roadside	486*	1.6%	0	0	486	1.6%
Habitat Enhancement/ replanting	1,678	6%	0	0	1,678	6%
Total	5,022	17%	231	0.8%	7,642	18.1%

Both of these projects were never fully completed as there are still some Smokey and Hardin units that need to be treated. Mastication units in the Smokey fuels treatment area are proposed to be treated in 2022. Some of the areas treated and that were proposed for treatment in the Smokey fuels project overlap with the Plaskett-Keller August Complex Phase 1 project.

Fire suppression/wildfire/Fire management

Fire has been documented to play a major role in the natural ecology of the forest ecosystems. Martin and Sapsis (1991) have documented the following changes caused by fire suppression in the Klamath Province” 1) increasing period between fires, 2) change in the season of fire activity, 3) shifting the proportion of area burned towards the high severity end of the scale and 4) generally increasing the number of large fires. Wills and Stuart (1994) determined that the fire suppression period (post 1905) average fire interval was significantly longer than the pre-settlement (1740-1849) and settlement (1849-1905) fire interval periods combined. They concluded on their study site, that large uniform patches created by infrequent catastrophic fires were interspersed with more frequent, smaller and low to moderate intensity fires. Their prediction is that the pre-settlement landscape was exceptionally patchy containing complex mosaics of different ages and size classes.

Past fire suppression has led to changes in size, duration and intensity of fires and also to changes in stand composition and density. Johnson and Smathers (1974), Vale (1977), and Weaver (1974) found vegetation composition changed significantly with fire suppression.

The species documented in this analysis will continue to be influenced by current fire suppression activities directly and indirectly. Direct influences can include line construction activities, which has the potential to remove suitable habitat, and aerial suppression support, which could cause nesting disruption from noise disturbance. Long-term vegetation changes due to continued fire suppression will affect them and prey species, as well as the risk of catastrophic stand-replacing fires. Fire is viewed as a natural process and current management has addressed the need to reduce fuels and fire hazards in order to prevent large stand replacing fires.

Fuels treatments is expected into the future in both chaparral and timbered stands throughout the Mendocino. These projects are unlikely to remove high quality suitable habitat for wildlife species. Treatments of this kind would reduce the potential for large, catastrophic stand replacing fires.

The most recent significant fires (not including the August Complex that is the basis of this analysis) was the Baseball Fire in 2020 on the Covelo District. The fire burned over 200 acres near the western boundary of the project area. Late successional habitat was not impacted from this fire.

Recreation

Most of the recreation done in the action area is camping associated with hunting, fishing OHV use and hiking. Plaskett Meadows, Masterson, Atchison and Telephone Campground, as well as other dispersed campsites occur within the action area and receive light to moderate use in the summer months and high use in the fall. Summer home cabins exist at Snow Basin and receives light use.

Range

The action area overlaps with West Log Springs, Twin Rocks, Hall Ridge and Alder Springs range allotments, however, the only active allotments are West Long Springs and Hall Ridge. The project area is entirely within Twin Rocks and Alder Springs, both of which are unused.

Road Maintenance

Road maintenance is ongoing and continued annually on forest system roads. Activities consists of grading, rolling dip and waterbar construction, culvert maintenance or replacement, paving/chip-sealing, hazard tree removal, bridge repair, low water crossing maintenance/ replacement, etc. Management recommendations identified for road maintenance activities reduce or eliminate negative effects to these species, therefore, in conjunction with proposed salvage, should not elevate the determinations made in this analysis.

Other Ownership

Tribal

There are no tribal lands within the Plaskett-Keller August Complex Phase 1 Action Area.

State

There are no state lands within the Plaskett-Keller August Complex Phase 1 Action Area.

Local

There are no property parcels maintained by county agencies within the Plaskett-Keller August Complex Phase 1 Action Area. Glenn and Mendocino Counties maintains road FH7 across the Forest. Glenn county also maintains Smith Camp road (22N35).

Private

Approximately 1,288 acres of private land exists within the action area. The private lands overlapping the action area receive varying degrees of use. Five parcels (240, 160, 80, 80 and 20 acres) on the eastside of FH7 appear to have light to moderate selective harvesting. Some of them

contain summer homes. Two parcels (1,800 and 30 acres) on the west side of FH7, containing mainly grassland, oak, and scattered conifer, are used mainly as a hunting club.

It is unknown what management will occur on smaller personal inholdings, however, it can be predicted some may be harvested, used for recreation, developed or burned through prescribed fire.

Bureau of Land Management

There are no BLM lands within the Plaskett-Keller August Complex Phase 1 Action Area.

Concurrent and Reasonably Foreseeable Actions

Proposed treatments for the Plaskett-Keller August Complex Phase 1 would occur on **2,164** acres of forest service land. Late successional habitat and nest groves for owl and goshawk activity centers that species depend on would not be treated. The best quality habitat for northern spotted owl would be maintained and not removed or downgraded.

It is anticipated that the implementation of the Plaskett-Keller Complex Phase 1, in combination with past, present and reasonably foreseeable actions, would not result in adverse effects or result in a trend towards federal listing for Northern goshawks, marten, fisher, wolverine, the 3 bat species, foothill yellow-legged frogs and western pond turtles. Although some habitat could be potentially removed or downgraded, it is very minimal in comparison to the landscape of the action area and forest. Home range functionality would not be reduced.

Continued management in this project area combined with the Plasket-Keller project should not affect population levels for these species across their range. Late successional habitat would remain intact as no treatment would occur and if future late successional reserves (LSR) habitat were to be modified, all LSR assessment guidelines (USDA 2000) would be followed. All treatments would occur only in matrix lands. By following snag and woody debris retention guidelines in the LRMP, wildlife snags and trees would be more than abundant in units and outside of units after treatment has occurred.

The Cold Springs and Powell CE salvage projects are proposed on the north eastern edge of the Plaskett-Keller August Complex Phase 1 project action area. These projects are not unlike Plaskett-Keller project, as they are salvage projects with fuels reductions from effects from the August Complex fire. Treatments include commercial salvage units, roadside salvage and fuels reductions after salvage. These treatments would meet the same purpose and needs as Plaskett-Keller August Complex Phase 1. Snags considered hazardous will also be removed within 200 feet of the roads within that project, however, abundant snags exist on the landscape that will be retained. The Cold springs and Powell salvage projects are directly overlapped and these projects are a total of approximately 468 acres combined. Both of these projects would completely stay out of late successional reserves, protecting the highest quality habitat for late seral dependent species.

Table 77. Total cumulative treatment acres for Cold springs and Powell salvage projects within the Plaskett-Keller August Complex Phase 1 Action Area (AA)

Treatment	Smokey	% of AA	Cold Springs	% of AA	Powell	% of AA	Total (acres)	% of AA
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Timber harvest, thinning/ fuels	0	0	0	0	0	0	0	0
Commercial/fuels Salvage/ Roadside	486 (mastication)	1.6	225	0.7	0	0	711	2.3%
Total	486	1.6%	225	0.7%	0	0	711	2.3%

Future fuels treatments would beneficially affect remaining suitable habitat in the project area. If appropriate LOPs would be implemented to reduce effects of any noise disturbance produced.

There are no planned timber harvest plans (THP) currently in or near the project area. The CalFire web site which contains the list and location of all THPs was checked on December 3, 2021. Private land activities include agriculture, grazing, domestic use, timber harvest, and fuel treatments. Timber harvest has occurred in adjacent areas and is expected to continue on the corporately owned timber ground. Impacts to all species analyzed and their habitat from the proposed project are considered to be minor based on the already burnt landscape, and therefore will not create adverse effects when combined with past activities on the Forest and those on adjacent private land.

Although small amounts of suitable habitat for wildlife species maybe impacted in the short-term, the long-term benefits would include a reduction of surface fuels preventing future wildfires and protection of remaining late successional habitat. Reducing surface fuels conditions would also benefit the watershed and aquatic health by reducing the potential for sediment wasting.

Summary of Determination of Effects:

It is my determination that Plaskett-Keller August Complex Phase 1 Salvage Project will not affect the following Threatened and Endangered species and their habitat:

- Western Snowy Plover
- California Red-legged Frog
- Yellow-Billed Cuckoo and their habitat

It is my determination that the Plaskett-Keller Project will affect the Northern Spotted Owl and its designated critical habitat. Formal consultation with the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act is required for these species.

Determinations of Effects

Northern Spotted Owl

The proposed activities *may affect and is likely to adversely affect* the northern spotted owl for the following reasons:

- Of the seventeen active owl territories in the action area, nine would be treated;
- Potential for Noise and smoke disturbance potentially could be produced by large landscape fuels and salvage treatments within the project area;
- Foraging and Dispersal habitat are located in treatment units where trees with less than 100% probability of mortality trees would be removed, resulting in a potential for modification or/ removal of suitable NSO habitat;
- Removal of any suitable habitat by definition is an adverse effect to NSO;
- Protection of Remaining areas of unburned vegetation and other residual legacy elements would be protected to serve as remnant wildlife structure as the area transitions through seral stages.
- The snag and coarse woody debris retention guidelines from the LRMP would provide for potential foraging perches and prey habitat if NSO are using the area to forage.
- LOPs would protect any remaining Nesting/ Roosting habitat and valid activity centers from all disturbance and work activity.
- Openings created by salvage operations would increase shrub habitat used by NSO prey such as woodrats, mice, and voles.
- Salvage harvesting would reduce fuel loads and potentially reduce the risk of future catastrophic wildfire in the action area and adjacent remaining stands.
- A total of 4 acres of nest groves would be modified and maintained;
- A total of 233 acres of Post Fire Foraging habitat would be removed due to proposed treatments.

Northern Spotted Owl Critical Habitat

The proposed activities *may affect but is not likely to adversely affect* the critical habitat for the following reasons:

- Project actions would not be removing or downgrading any PBFs in critical habitat;
- PBFs are only located in salvage and roadside units where 100% mortality would be removed;
- The maintenance of snags and downed logs within the treatment units which would provide potential foraging roosts and prey species habitat if NSO do forage in high severity burned areas;
- Protection of remaining areas of unburned vegetation and other residual legacy elements would serve as remnant wildlife structure as the area transitions through seral stages.
- The snag and coarse woody debris retention guidelines from the LRMP will provide for potential foraging perches and prey habitat if NSO are using the area to forage.
- LOPs would protect any remaining Nesting/ Roosting habitat and valid activity centers from all disturbance and work activity.
- The high percentage of untreated lower-severity burned areas within the action area,

- The high amount of unburned, untreated suitable NRF habitat available for foraging in home ranges within the north eastern and southern portion of the action area.
- Openings created by salvage operations would increase shrub habitat used by NSO prey such as woodrats, mice, and voles.
- No smoke and fire disturbance will occur during the breeding season.
- Only a small amount of Post Fire Foraging would be treated in comparison to remaining acres in the action area and across the forest landscape.
- Treated Post Fire Foraging areas would be a point a focus of replanting in restoration plans of phase 2.

The proposed action may affect/impact the following FSS species or its habitat:

Northern Goshawk

It is my determination that the Plaskett-Keller August Complex Phase 1 Salvage project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the northern goshawk. This is based on the current lack of nesting habitat in the project area, the minor effects to prey species, and although foraging habitat may be altered, it will remain functional.

Pallid, Townsend Big-eared, and Fringed Myotis Bats

It is my determination that the Plaskett-Keller August Complex Phase 1 Salvage project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the Townsends Big-eared bat, Pallid bat and Fringed Myotis. This is based on the potential effects to roosting bats and habitat, the abundance of snags and foraging habitat outside the treatment units, the ability of the treatment units to provide roosting and foraging habitat after treatment, the limited effects to prey species.

American Marten, Pacific Fisher and North American Wolverine

It is my determination that the Plaskett-Keller August Complex Phase 1 Salvage project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the American Marten and Pacific fisher and North American Wolverine. This is based on the lack of denning habitat in the project area, the large size of their home ranges, the limited effects to prey species, and although foraging habitat may be altered, it will remain functional.

Western Pond Turtle

It is my determination that the Plaskett-Keller August Complex Phase 1 Salvage project may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the western pond turtle. Based on the implementation of stream water drafting LOPs, BMPs, SMZ buffers and hydrologic design criteria to minimize sedimentation there would be minimal impacts. However, based on the potential for direct disturbance from vehicular traffic and mechanical equipment western pond turtles, there could be direct effects.

It is my determination that this project will not affect/impact any Forest Service sensitive species or its habitat listed below:

American Peregrine Falcon

It is my determination that the Plaskett-Keller August Complex Phase 1 Salvage project will have no impact on the bald eagle as there are no known nesting sites in the project area. Although removal of suitable perching snags could occur, snag retention and CWD retention guidelines are in place to ensure high quality snags and foraging logs remain on the landscape.

Bald Eagle

It is my determination that the Plaskett-Keller August Complex Phase 1 Salvage project will have no impact on the bald eagle as there are no known nesting sites in the project area. Although removal of suitable perching snags could occur, snag retention and CWD retention guidelines are in place to ensure high quality snags and foraging logs remain on the landscape.

Foothill Yellow-legged Frog

It is my determination that the Plaskett-Keller August Complex Phase 1 Salvage Project will not have an impact on the Foothill Yellow-legged Frog. The North Shore project may impact individuals, but is not likely to cause a trend towards federal listing because the potential to harm or harass individuals is very low if project design features and best management practices are followed.

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APPENDIX A

EXPLANATION OF TIMBER STRATA CODES in GIS CALVEG STRATA

The following is an explanation of timber strata codes utilized on the Mendocino National Forest timber stratum maps:

1. FOREST VEGETATION

LABEL Code Type

M	Mixed conifer/pine/Douglas-fir (they are all lumped as M) D
	Conifer-hardwood
R	Red fir/white fir
K	Knobcone pine
H	Hardwoods (all lumped)
OOO	Non-timber (brush, barren, grasses)

All of the commercial conifer types above are Regional types, listed in the Regional timber inventory handbook, except the conifer-hardwood type. This type was created by the Mendocino N.F. to recognize the high levels of hardwood stocking in many conifer stands, which occurs on a significant area of the Forest, and the effect this has on timber management and wildlife habitat.

2. SIZE CLASS LABELS FOR CONIFER AND HARDWOOD STANDS

<u>CODE</u>	<u>DESCRIPTION</u>	<u>SIZE CLASS</u>
1	Crowns <5 ft. diameter	Seedlings and saplings
2	Crowns 6-12 ft. diameter	Poles
3	Crowns 13-24 ft. diameter	Small sawtimber

4	Crowns 25-40 ft. diameter	Medium sawtimber
5	Crowns >40 ft. diameter	Large sawtimber
6	Uneven-aged	No predominant size class

3. CROWN CLOSURE CLASS LABELS FOR CONIFER AND HARDWOOD STANDS

CODE PERIMETER CROWN CLOSURE AS A % OF AREA WITHIN THE POLYGON

S	Less than
20% P	20 to
39%	
N/G	40% and above
X	Unknown

A. LABEL CONSIST OF THREE ELEMENTS WHICH IDENTIFY SPECIES, SIZE CLASS, AND CROWN CLOSURE CLASS - LISTED IN THAT ORDER

PLANTATIONS

MNO	Un-stocked plantations (now presently stocked – data from 1994
inventory) M0X	First decade of growth
M1X	Second decade of growth
M2X	Third decade of growth
M3X	Fourth decade of growth

FOREST VEGETATION LABEL:

The predominate tree species (in terms of area occupied by crowns) is listed. In non-forested areas, the predominant ground cover code is used.

SIZE CLASS:

Size class is based on the crown area of predominant sawtimber sized trees. However, if these trees make up less than 20% of the total tree crown area, then the size class is based on the crown area of poles or saplings, whichever are predominant. The uneven-age code (code 6) is applied to stands in which two or more size classes exist, either in layers or intermingled, and no predominant size class can be identified. The uneven-aged code is applied only to conifer stands which have a crown closure of 40% or more.

CROWN CLOSURE CLASS:

Crown closure is defined as the ratio of tree species crown area to the total area within the polygon perimeter.

APPENDIX B

Successional Stages and their respective forest vegetation types found on page E-3 of the Mendocino LRMP

Successional Stage	Forest Vegetation Types
Grass/forb	PL
Shrub/seedling/sapling	1
Poles/small trees, <40% crown closure	2S, 3S, 2P, 3P
Poles/small trees, 40+% crown closure	2N, 2G, 3N, 3G
Medium/large trees, <40% crown closure	4S, 4P
Medium/large trees, 40-70% crown closure	4N, 5N, 6N
Medium/large trees, >70% crown closure	4G, 5G, 6G

Appendix C: IPaC Project Species List



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
Phone: (707) 822-7201 Fax: (707) 822-8411



In Reply Refer To:
Consultation Code: 08EACT00-2021-SLI-0134
Event Code: 08EACT00-2021-E-00293
Project Name: Plaskett Keller Phase 1

February 02, 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2))

02/02/2021

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(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;
<http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

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Event Code: 08EACT00-2021-E-00293

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Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

This project's location is within the jurisdiction of offices which do not participate in IPaC's automated species list delivery. Please contact the following offices directly for more information:

Red Bluff Fish And Wildlife Office
10950 Tyler Road
Red Bluff, CA 96080-7762
(530) 527-3043

02/02/2021

Event Code: 08EACT00-2021-E-00293

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Project Summary

Consultation Code: 08EACT00-2021-SLI-0134

Event Code: 08EACT00-2021-E-00293

Project Name: Plaskett Keller Phase 1

Project Type: FIRE

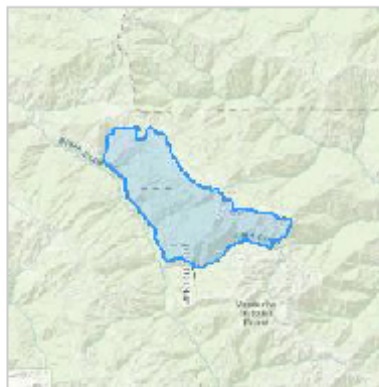
Project Description: The Mendocino National Forest is planning the Plaskett-Keller August Complex Phase 1 Project. This project proposes approximately 4,500 acres of post-fire recovery activities to remove fire-killed and fire-injured trees. The project would improve employee and public safety, capture remaining economic value of dead trees, and reduce post-fire fuels to prevent the excessive buildup of future fuel loads.

The August Complex burned a total of 1,032,648 acres, including 612,634 acres on the Mendocino National Forest. For post-fire recovery, the Forest is considering a three-phase approach. Phase 1 will address time-sensitive needs of addressing safety concerns along roadways and campgrounds as well as economic recovery. Phase 2 follows Phase 1 with restoration activities such as reforestation, additional fuels reduction work, habitat enhancement, recreation site improvements, and more. Phase 3 will address long term recovery across the landscape using the Watershed Condition Framework approach.

This scoping notice addresses Phase 1 which proposes removal of fire-killed and fire-injured trees to mitigate hazards posed by dead and dying trees, for recovery of economic value of fire-impacted timber, and for managing forest fuels.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@39.74111485,-122.90793325653419,14z>



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Event Code: 08EACT00-2021-E-00293

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Counties: Glenn and Mendocino counties, California

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Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl <i>Strix occidentalis caurina</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Western Snowy Plover <i>Charadrius nivosus nivosus</i> Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

